

AD-A151 438

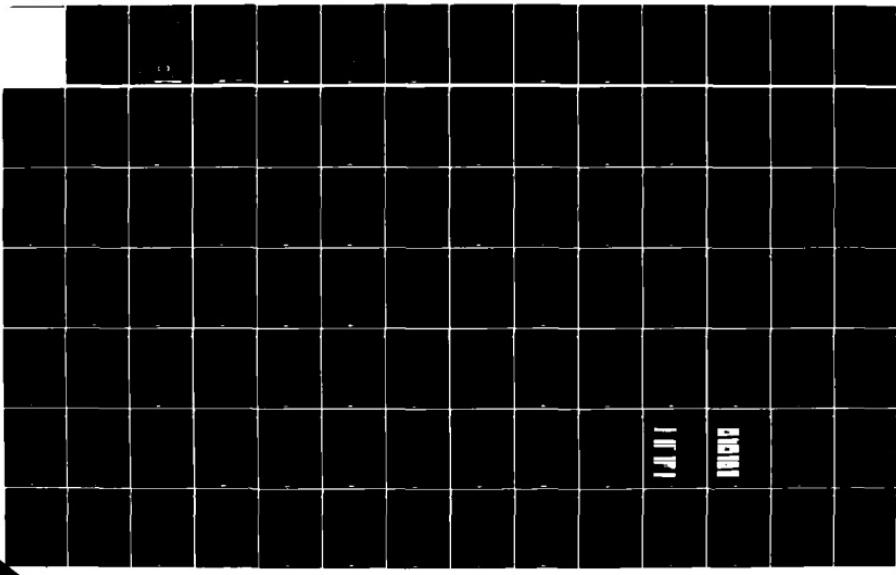
FINGER MATERIALS FOR AIR CUSHION VEHICLES VOLUME 1
FLEXIBLE COATINGS FOR.. (U) BELL AEROSPACE TEXTRON
BUFFALO NY P K CONN ET AL. DEC 04 7407-027000-VOL-1

UNCLASSIFIED

DTNSRDC-85/003 N00600-78-C-0250

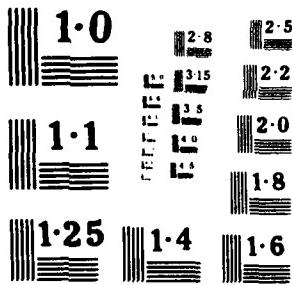
F/B 11/3

WL



111

111



DAVID W. TAYLOR NAVAL SHIP
RESEARCH AND DEVELOPMENT CENTER

Bethesda, Maryland 20884



2

AD-A151 438

FINGER MATERIALS FOR AIR CUSHION VEHICLES VOLUME I:
FLEXIBLE COATINGS FOR FINGER MATERIALS

by

Paul K. Conn and Ivan Snell
Bell Aerospace Textron
and
William Klemons, DTNSRDC

APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

SHIP MATERIALS ENGINEERING DEPARTMENT
RESEARCH AND DEVELOPMENT REPORT



December 1984

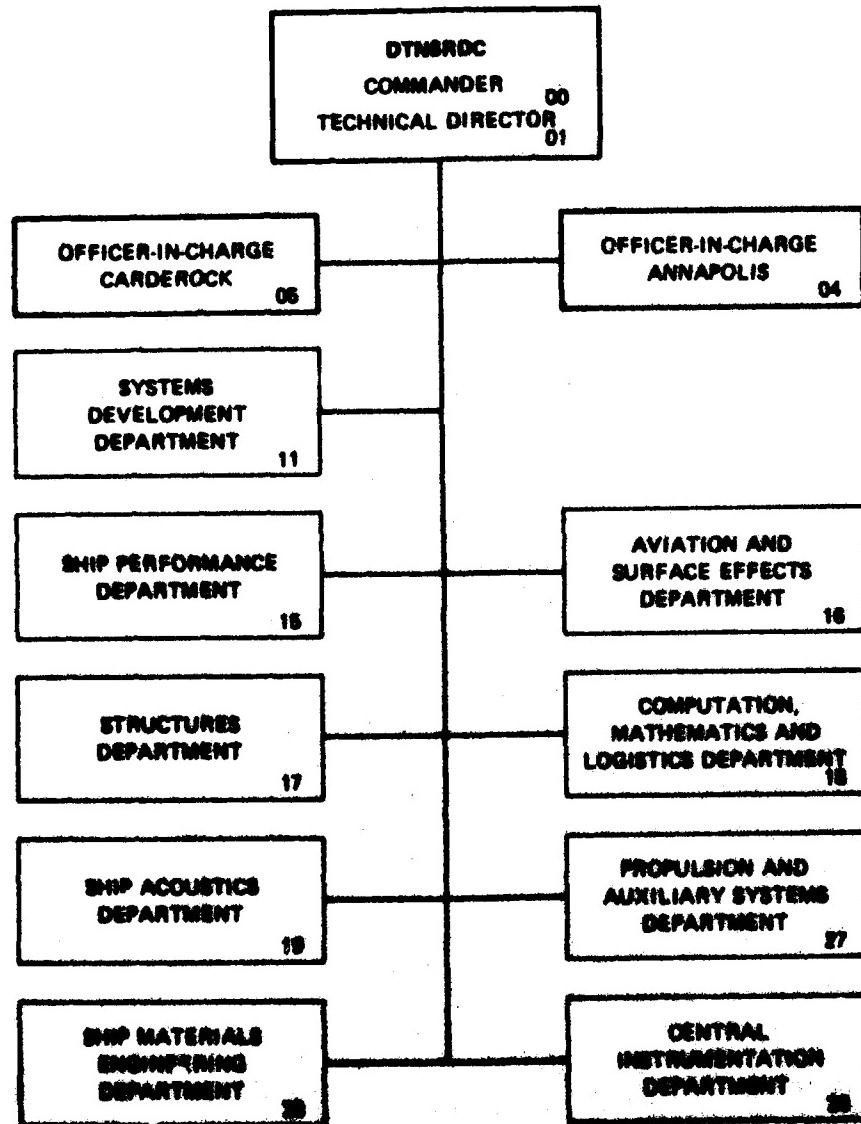
DTNSRDC-86/003

85 03 06 006

DTIC FILE COPY

FINGER MATERIALS FOR AIR CUSHION VEHICLES VOLUME I:
FLEXIBLE COATINGS FOR FINGER MATERIALS

MAJOR DTNSRDC ORGANIZATIONAL COMPONENTS



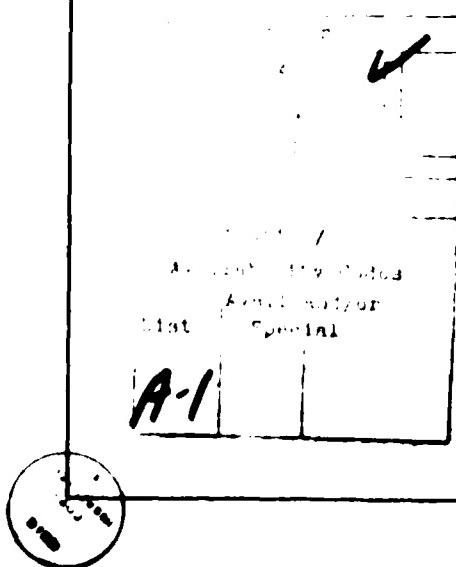
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
AD-A151438		
4. TITLE (or SUBTITLE)	5. TYPE OF REPORT & PERIOD COVERED	
ANALYSIS OF POLYMER FORMULATIONS FOR COATING FABRIC	Report Period of Report: 10/1/68 - 12/31/68	
6. PERFORMING ORG. REPORT NUMBER	7. CONTRACT OR GRANT NUMBER	
ARL-TR-68-10	N/A	
8. DISTRIBUTION STATEMENT (DoD Form 1)	9. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS	
Approved for public release by the Defense Technical Information Center	Task Area 0510-000-0000 Work Unit 0510-000-0000	
10. REPORT DATE	11. NUMBER OF PAGES	
11/15/68	1	
12. SECURITY CLASS. OF THIS REPORT	13a. DECLASSIFICATION/DOWNGRADING	
UNCLASSIFIED	SCHEDULE	
14. ABSTRACT STATEMENT (If different from Report)		
15. SUPPLEMENTARY NOTES		
16. REFERENCE NUMBER (Continue on reverse side if necessary and identify by block number) 1. ARL-TR-68-10 2. Castable Liquid Polyurethane 3. Other Coated Fabrics 4. M1 Coating Vehicle Flexible Materials		
17. ABSTRACT (Continue on reverse side if necessary and identify by block number) Twenty polymer formulations from ten selected gum rubber polymers or polymer blends and fourteen formulations of castable liquid polyurethane polymers were characterized as coatings for the coated fabric that is the type material used to make flexible fingers for air cushion vehicles. The formulations were screened for crack resistance. (Continued on reverse side)		

The results of the flame resistance of the samples were evaluated to determine material which can be used to make the outer jacket of the fiber. The samples of the various materials were cut into strips and placed in a furnace at 500° C. The temperature was increased at a rate of 10° C/min until the polymer sample was completely melted. The time required for the polymer to melt was recorded. The time required for the polymer to melt was compared with the standard test time of 10 minutes. Finally, the polymer samples of the various materials were compared with each other.

It was found that better track growth times were obtained with better thermal stability of the polymer. A chlorinated polyethylene polymer had the best thermal properties compared to the other polymers tested. Polyvinylchloride, Bunaresin, and other different types of determinations yielded results showing that the standard tests may not identify materials with high performance characteristics. However, it is apparent that woven fabric materials exhibited greater lower tear strength at 100° C than at 50° C.

Several knitting, knit and knit structures were evaluated for their effects for polymer containing the knit structures. The structures were not as efficient on a strengths basis as the woven fabrics. Castable polyurethane was evaluated for its permeability material without any additives. These materials were found to exhibit poor flame retardant and thermal fatigue resistance.



DTIC
ELECTE
S MAR 14 1985 D
B

ENCLOSURE

TABLE OF CONTENTS

	Page
INTRODUCTION	111
DISCUSSION	12
ACKNOWLEDGMENT	18
REFERENCES	1
MINIMIZATION INFORMATION	2
APPENDIX	2
ACKNOWLEDGMENT	2
REFERENCES	2
DISCUSSION	3
RESULTS OF EXPERIMENTAL WORK	3
1. GUM RUBBER COATING DEVELOPMENT	6
a. Heterogeneous Materials Development	18
b. Homogeneous Materials Development	30
2. POLYURETHANE DEVELOPMENT	33
3. POLYURETHANE POLYMER	37
4. POLYURETHANE POLYMER	47
5. POLYURETHANE AND CHARACTERIZATION TESTS	53
6. NOTES ON DETAILED EXPERIMENTAL DATA	57
7. POLYURETHANE THERMAL CONDUCTIVITY OF THREE PLASTICS	111
8. SUMMARY OF SUPPLIERS	113

LIST OF FIGURES

Fig. 1. Tensile Strength Versus Temperature	26
Fig. 2. Performance of Formulation #205 Polyurethane Into Polyester Mats of Weight 5, 6, 11.8, and 14.8 Ounces per Square Yard	69

10

III. 1 OF TABLE I

1000

1. <i>Monoclonal antibodies</i>	1000
2. <i>Antibodies to growth factors</i>	1000
3. <i>Antibodies to cytokines</i>	1000
4. <i>Antibodies to adhesion molecules</i>	1000
5. <i>Antibodies to extracellular matrix proteins</i>	1000
6. <i>Antibodies to cell surface receptors</i>	1000
7. <i>Antibodies to nuclear antigens</i>	1000
8. <i>Antibodies to cytoskeletal proteins</i>	1000
9. <i>Antibodies to membrane proteins</i>	1000
10. <i>Antibodies to enzymes</i>	1000
11. <i>Antibodies to hormones</i>	1000
12. <i>Antibodies to neurotransmitters</i>	1000
13. <i>Antibodies to viruses</i>	1000
14. <i>Antibodies to bacteria</i>	1000
15. <i>Antibodies to fungi</i>	1000
16. <i>Antibodies to parasites</i>	1000
17. <i>Antibodies to plants</i>	1000
18. <i>Antibodies to other organisms</i>	1000
19. <i>Antibodies to cellular components</i>	1000
20. <i>Antibodies to cellular processes</i>	1000
21. <i>Antibodies to cellular structures</i>	1000
22. <i>Antibodies to cellular organelles</i>	1000
23. <i>Antibodies to cellular membranes</i>	1000
24. <i>Antibodies to cellular surfaces</i>	1000
25. <i>Antibodies to cellular interiors</i>	1000
26. <i>Antibodies to cellular junctions</i>	1000
27. <i>Antibodies to cellular boundaries</i>	1000
28. <i>Antibodies to cellular interfaces</i>	1000
29. <i>Antibodies to cellular interfaces</i>	1000
30. <i>Antibodies to cellular interfaces</i>	1000
31. <i>Antibodies to cellular interfaces</i>	1000
32. <i>Antibodies to cellular interfaces</i>	1000
33. <i>Antibodies to cellular interfaces</i>	1000
34. <i>Antibodies to cellular interfaces</i>	1000
35. <i>Antibodies to cellular interfaces</i>	1000
36. <i>Antibodies to cellular interfaces</i>	1000
37. <i>Antibodies to cellular interfaces</i>	1000
38. <i>Antibodies to cellular interfaces</i>	1000
39. <i>Antibodies to cellular interfaces</i>	1000
40. <i>Antibodies to cellular interfaces</i>	1000
41. <i>Antibodies to cellular interfaces</i>	1000
42. <i>Antibodies to cellular interfaces</i>	1000
43. <i>Antibodies to cellular interfaces</i>	1000
44. <i>Antibodies to cellular interfaces</i>	1000
45. <i>Antibodies to cellular interfaces</i>	1000
46. <i>Antibodies to cellular interfaces</i>	1000
47. <i>Antibodies to cellular interfaces</i>	1000
48. <i>Antibodies to cellular interfaces</i>	1000
49. <i>Antibodies to cellular interfaces</i>	1000
50. <i>Antibodies to cellular interfaces</i>	1000
51. <i>Antibodies to cellular interfaces</i>	1000
52. <i>Antibodies to cellular interfaces</i>	1000
53. <i>Antibodies to cellular interfaces</i>	1000
54. <i>Antibodies to cellular interfaces</i>	1000
55. <i>Antibodies to cellular interfaces</i>	1000
56. <i>Antibodies to cellular interfaces</i>	1000
57. <i>Antibodies to cellular interfaces</i>	1000
58. <i>Antibodies to cellular interfaces</i>	1000
59. <i>Antibodies to cellular interfaces</i>	1000
60. <i>Antibodies to cellular interfaces</i>	1000
61. <i>Antibodies to cellular interfaces</i>	1000
62. <i>Antibodies to cellular interfaces</i>	1000
63. <i>Antibodies to cellular interfaces</i>	1000
64. <i>Antibodies to cellular interfaces</i>	1000
65. <i>Antibodies to cellular interfaces</i>	1000
66. <i>Antibodies to cellular interfaces</i>	1000
67. <i>Antibodies to cellular interfaces</i>	1000
68. <i>Antibodies to cellular interfaces</i>	1000
69. <i>Antibodies to cellular interfaces</i>	1000
70. <i>Antibodies to cellular interfaces</i>	1000
71. <i>Antibodies to cellular interfaces</i>	1000
72. <i>Antibodies to cellular interfaces</i>	1000
73. <i>Antibodies to cellular interfaces</i>	1000
74. <i>Antibodies to cellular interfaces</i>	1000
75. <i>Antibodies to cellular interfaces</i>	1000
76. <i>Antibodies to cellular interfaces</i>	1000
77. <i>Antibodies to cellular interfaces</i>	1000
78. <i>Antibodies to cellular interfaces</i>	1000
79. <i>Antibodies to cellular interfaces</i>	1000
80. <i>Antibodies to cellular interfaces</i>	1000
81. <i>Antibodies to cellular interfaces</i>	1000
82. <i>Antibodies to cellular interfaces</i>	1000
83. <i>Antibodies to cellular interfaces</i>	1000
84. <i>Antibodies to cellular interfaces</i>	1000
85. <i>Antibodies to cellular interfaces</i>	1000
86. <i>Antibodies to cellular interfaces</i>	1000
87. <i>Antibodies to cellular interfaces</i>	1000
88. <i>Antibodies to cellular interfaces</i>	1000
89. <i>Antibodies to cellular interfaces</i>	1000
90. <i>Antibodies to cellular interfaces</i>	1000
91. <i>Antibodies to cellular interfaces</i>	1000
92. <i>Antibodies to cellular interfaces</i>	1000
93. <i>Antibodies to cellular interfaces</i>	1000
94. <i>Antibodies to cellular interfaces</i>	1000
95. <i>Antibodies to cellular interfaces</i>	1000
96. <i>Antibodies to cellular interfaces</i>	1000
97. <i>Antibodies to cellular interfaces</i>	1000
98. <i>Antibodies to cellular interfaces</i>	1000
99. <i>Antibodies to cellular interfaces</i>	1000
100. <i>Antibodies to cellular interfaces</i>	1000

1. The first step in the process of determining the best
method of treatment is to determine the cause of the disease.
2. The second step is to determine the best method of
treating the disease.

3. The third step is to determine the best method of
treating the disease.

4. The fourth step is to determine the best method of
treating the disease.

5. The fifth step is to determine the best method of
treating the disease.

6. The sixth step is to determine the best method of
treating the disease.

7. The seventh step is to determine the best method of
treating the disease.

8. The eighth step is to determine the best method of
treating the disease.

9. The ninth step is to determine the best method of
treating the disease.

10. The tenth step is to determine the best method of
treating the disease.

11. The eleventh step is to determine the best method of
treating the disease.

12. The twelfth step is to determine the best method of
treating the disease.

13. The thirteenth step is to determine the best method of
treating the disease.

14. The fourteenth step is to determine the best method of
treating the disease.

15. The fifteenth step is to determine the best method of
treating the disease.

16. The sixteenth step is to determine the best method of
treating the disease.

17. The seventeenth step is to determine the best method of
treating the disease.

18. The eighteenth step is to determine the best method of
treating the disease.

19. The nineteenth step is to determine the best method of
treating the disease.

20. The twentieth step is to determine the best method of
treating the disease.

21. The twenty-first step is to determine the best method of
treating the disease.

22. The twenty-second step is to determine the best method of
treating the disease.

23. The twenty-third step is to determine the best method of
treating the disease.

24. The twenty-fourth step is to determine the best method of
treating the disease.

25. The twenty-fifth step is to determine the best method of
treating the disease.

26. The twenty-sixth step is to determine the best method of
treating the disease.

27. The twenty-seventh step is to determine the best method of
treating the disease.

28. The twenty-eighth step is to determine the best method of
treating the disease.

29. The twenty-ninth step is to determine the best method of
treating the disease.

30. The thirtieth step is to determine the best method of
treating the disease.

31. The thirty-first step is to determine the best method of
treating the disease.

32. The thirty-second step is to determine the best method of
treating the disease.

33. The thirty-third step is to determine the best method of
treating the disease.

34. The thirty-fourth step is to determine the best method of
treating the disease.

35. The thirty-fifth step is to determine the best method of
treating the disease.

36. The thirty-sixth step is to determine the best method of
treating the disease.

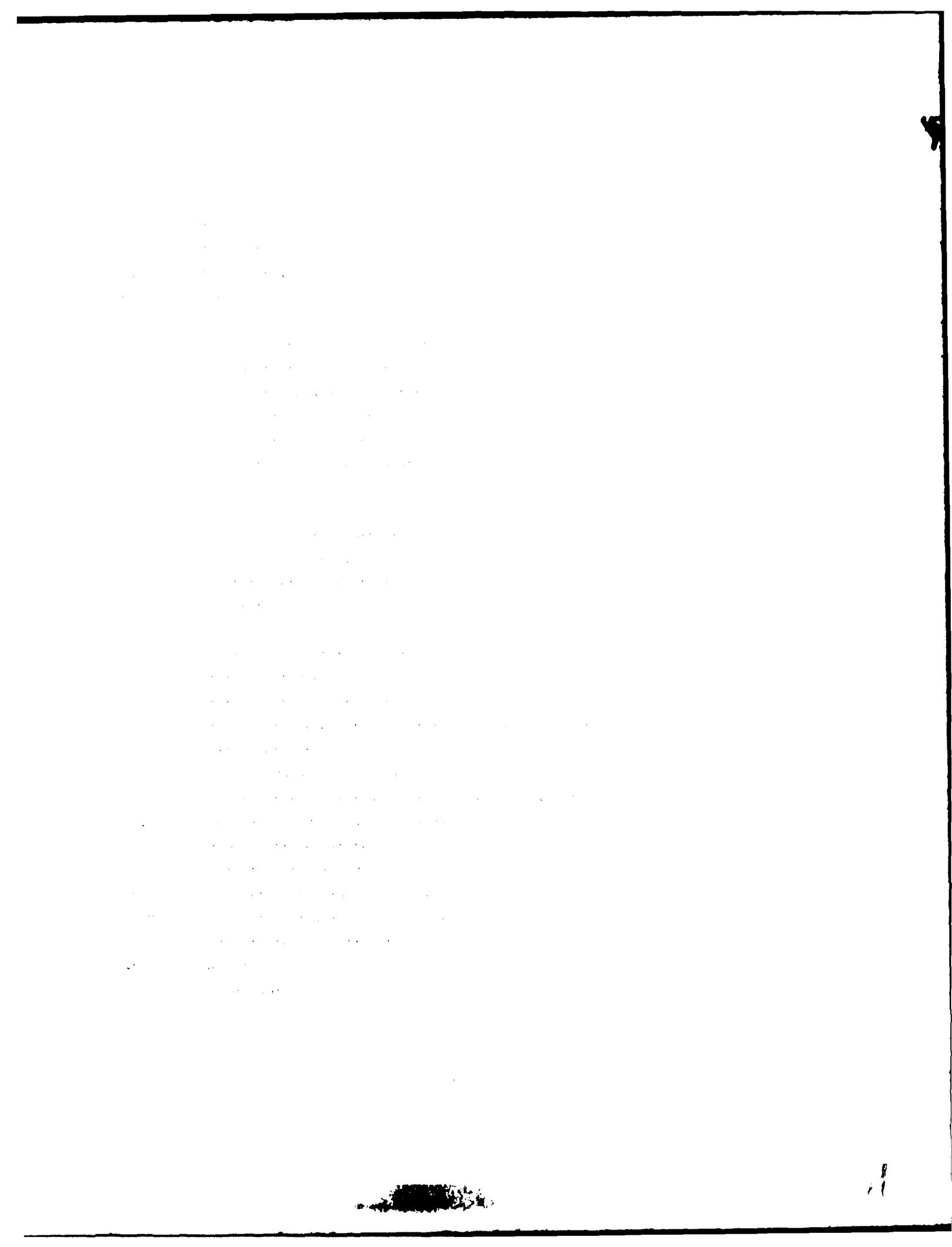
37. The thirty-seventh step is to determine the best method of
treating the disease.

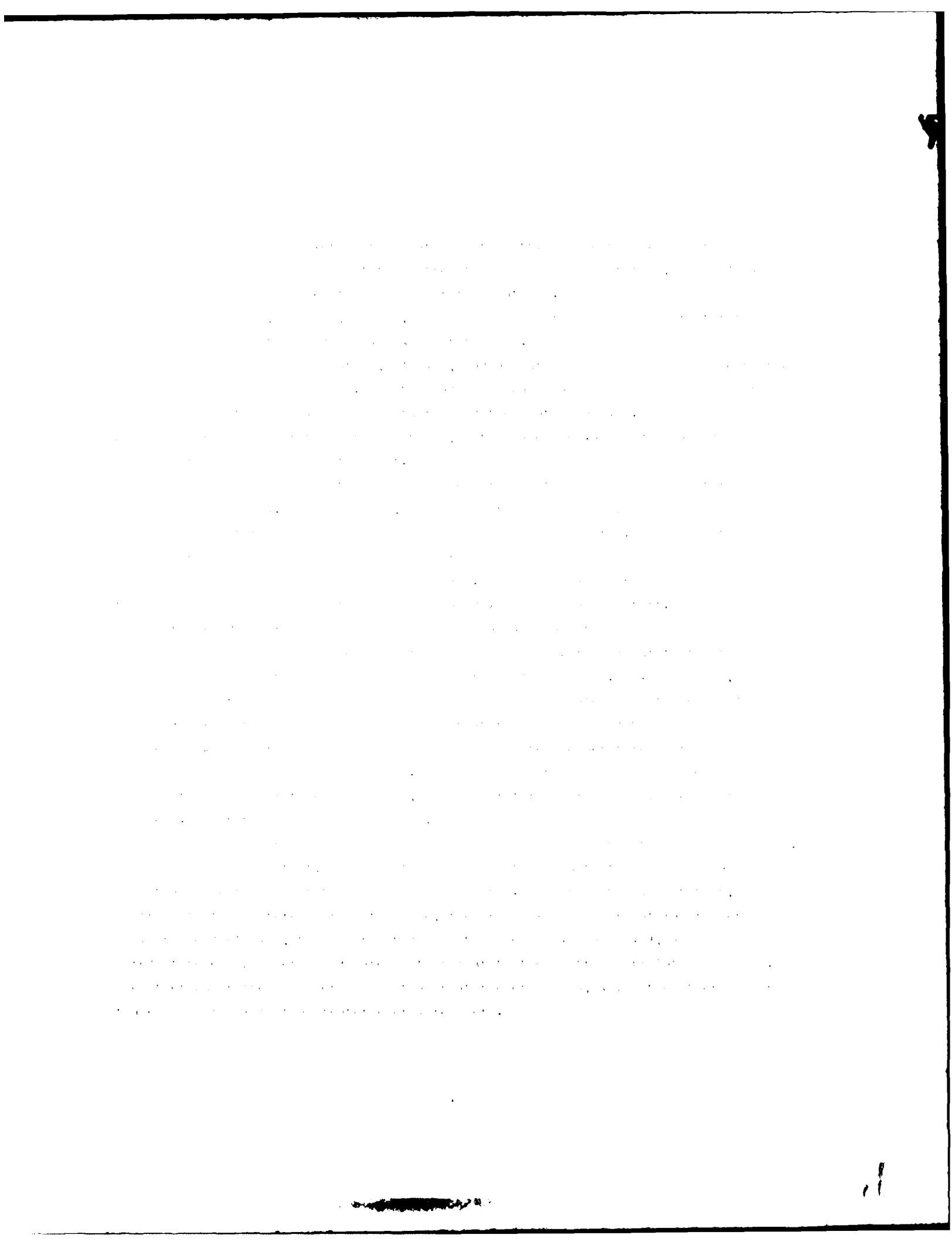
38. The thirty-eighth step is to determine the best method of
treating the disease.

39. The thirty-ninth step is to determine the best method of
treating the disease.

40. The forty-thousandth step is to determine the best method of
treating the disease.

ABBREVIATIONS AND ACRONYMS





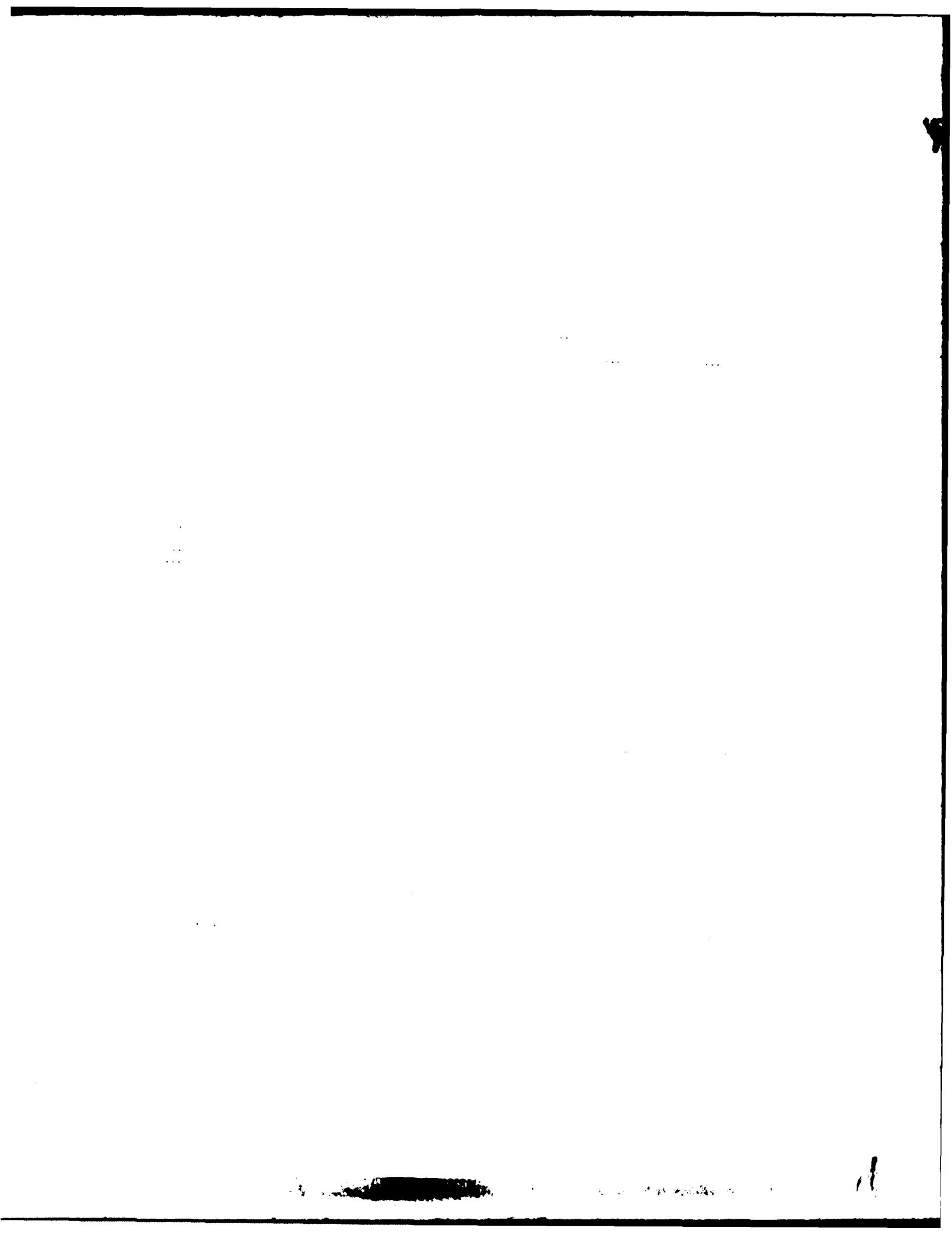
1. The first step in the process of determining the best way to approach a problem is to define the problem. This involves identifying the key issues and constraints that must be considered. It is important to have a clear understanding of the problem before proceeding to the next steps.

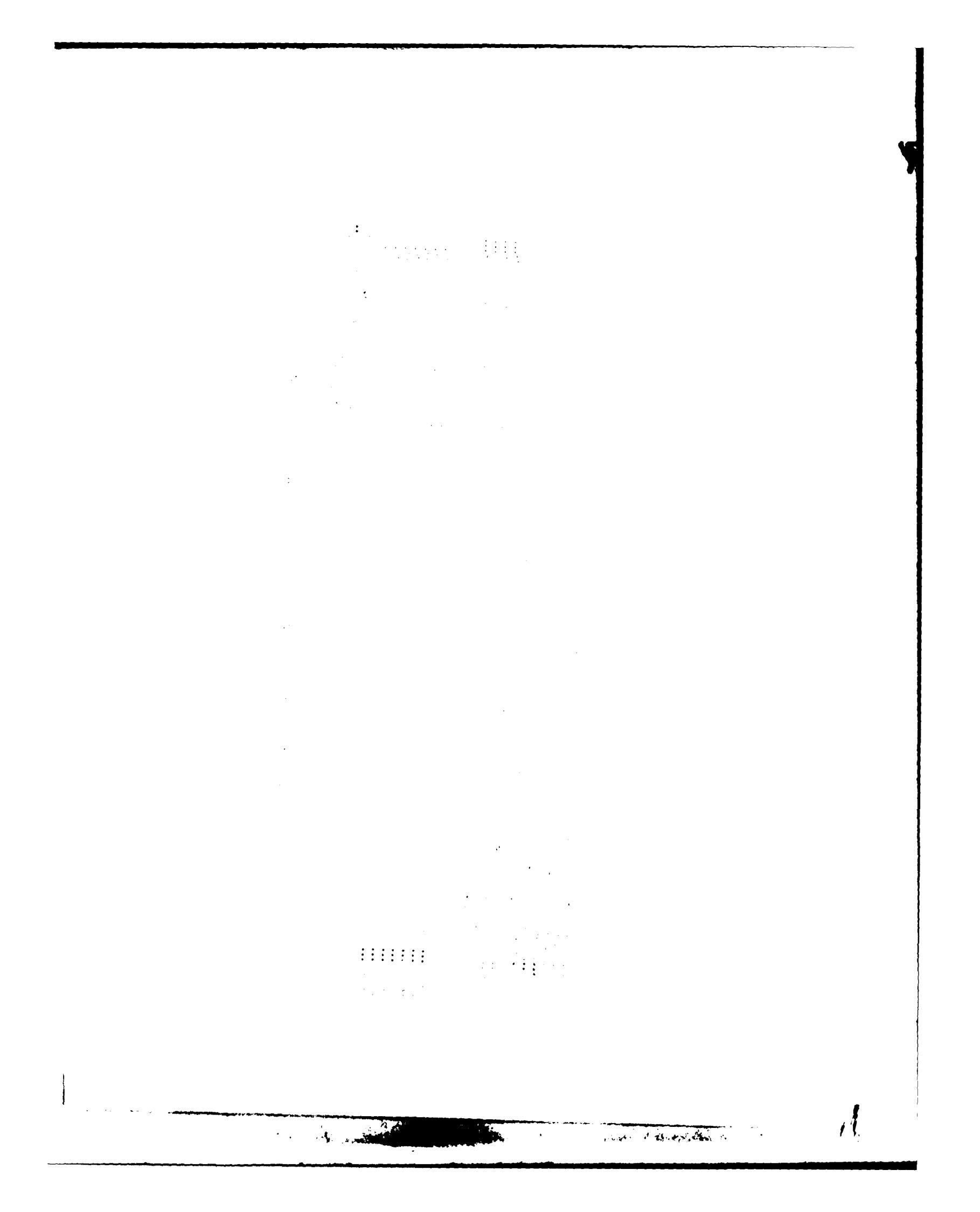
2. Once the problem has been defined, the next step is to generate potential solutions. This can be done through a variety of methods, such as brainstorming, SWOT analysis, or PESTLE analysis. It is important to consider a wide range of options, even if they may not seem immediately feasible.

3. After generating potential solutions, the next step is to evaluate them. This involves assessing each solution based on its merits and drawbacks. It is important to consider both objective and subjective factors, such as cost, feasibility, and ethical implications.

4. Once potential solutions have been evaluated, the next step is to select the best one. This involves choosing the solution that best fits the specific needs and goals of the organization. It is important to make a well-informed decision based on a thorough analysis of the available options.

5. Finally, the selected solution must be implemented. This involves developing a plan of action, assigning responsibilities, and monitoring progress. It is important to have a clear understanding of the implementation process and to be prepared to make adjustments as needed.





1. The first step in the process of determining the best way to approach a problem is to define the problem. This involves identifying the key issues, constraints, and goals of the situation. It is important to have a clear understanding of what needs to be accomplished and what factors may impact the outcome.

2. Once the problem has been defined, the next step is to generate potential solutions. This can be done through brainstorming sessions, research, or consultation with experts. It is important to consider a variety of options and evaluate them based on their feasibility, cost, and potential impact.

3. After generating potential solutions, the next step is to evaluate them. This involves assessing each option's strengths and weaknesses, as well as its potential outcomes. It is important to be objective and thorough in this evaluation process to ensure that the best solution is selected.

4. Once a solution has been selected, the next step is to implement it. This involves developing a plan of action, assigning responsibilities, and monitoring progress. It is important to communicate the plan clearly to all stakeholders and provide support and resources as needed.

5. Finally, the last step is to evaluate the outcome. This involves measuring the results against the original goals and objectives. It is important to be open to feedback and make adjustments as necessary to ensure success.

of propylene oxide polymer and was ineffective with the chlorinated polyethylene polymer. This is contrary to published results for a natural rubber/30% butadiene blend.* The concentration used has not been tested for the particular polymers.

The crack growth and elevated fatigue results for the castable liquid polymer blends are summarized in Table 4. These formulations were prepared by reacting high molecular weight hydroxy terminated polyethers, polyurethane or polybutadienes with one of two diisocyanates initially; the prepolymers resulting from these reactions were reacted subsequently with either a low molecular weight hydroxy terminated hydrocarbon or diamine as discussed in Appendix B. In several instances, a reactive diamine was added to the polymer. These particular formulations had considerable resistance to static tear, elongation, and crack growth and elevated fatigue specimens were cut at the appropriate and compensated extension determined by dynamic mechanical analysis. The temperatures used in these tests are given in Table 4. Figures 4 through 6 show the results of these properties at various temperatures.

The results in Table 4 show that 11 of the 14 formulations had better crack growth resistance than the standard EVA-100 and the control, PCE-198. Only four of the 14 were substantially better. In contrast, only one of the 14 had better flexural fatigue resistance and two others had approximately the same flexural fatigue resistance as the standard. From the preliminary screening tests, six rubber formulations, BA-100, BA-100/10, BA-100/100, BA-100/1000, and BA-1000, and castable liquid polymer blends, EVA-100, PCE-198, and PCE-200, were selected for characterization and secondary characterization tests listed in Appendix C.

The results of the primary characterization tests of the polymer formulations are summarized in the next four tables. In Table 5 are summarized the hardness, tensile strength, shear properties, pvc abrasion index, and coating adhesion. Values for the tensile property test results, as measured on the Goodrich flexometer, are summarized in Table 6. Resilience is summarized in Table 7 for the Tupke rebound test and in Table 8 for the Yerzley method. In these tables, the results for the polymers are compared to results for the control formulation, ECA-502.

* KEPF, G. J., Loban, R. B., "Effects of Molybdenum Disulfide on Elastomer Flex Life and other Properties," paper presented at a meeting of the Rubber Division, American Chemical Society, New Orleans, LA (7-10 Oct 1973).

generally, the variables in the formulations were the type and extent of crosslinks, the substitution of some silicones for others, siloxane type and extent of esterification, the type of aromatic amine, the use of polymer dispersants, and the type of the system. One important feature of BATO is that one part of BATO will form latex and another part is potentially free to modulate the effects of other ingredients on the latex properties. Melamine and the organic acid triethylenglycol diacetate are also included in the formulated polymeric emulsion latexes to control the pH and the viscosity of the latex.

the first 100 m of the water column. The highest density of larvae was found at the surface, and the density decreased with depth. At 100 m depth, the density of larvae was approximately 10% of the density at the surface. The density of larvae decreased with increasing water temperature, and the density of larvae was highest at the surface. The density of larvae decreased with increasing water temperature, and the density of larvae was highest at the surface.

efficiency of saturated polyacrylate ester monomer. Two polymer types, one having a low melt viscosity and melt weld formulations which were designed as the most efficient type.

The results show that the crack growth and the flexural fatigue resistance were different for the hard, soft-1 and soft-3 polybutyl polymers. However, the use of soft-3 polymer in the saltwater was detrimental to the crack growth and flexural fatigue life.

composition of each catalyst, and the constituents used for castable
catalysts along with their properties along with a listing of the charac-
teristics of potential elemental filter and a description of the thermal
stability of each.

1.4. *Statistical analysis*. All data were analyzed by SPSS.

the first two sections of this paper have been concerned with the formulation of the differential equations of motion of the system. The third section will be devoted to the problem of the identification of the parameters of the system, and the final section will be concerned with the application of the theory to the problem of the identification of the parameters of the system with the help of the data obtained by the methods of the Augmented Least Squares. Finally, it must be noted that the results of the present paper are not limited to the case of the linearized model of the system. They can also be applied to the case of the non-linearized model of the system.

After each trial, we recorded the number of errors made by the subjects during the trials. The data were collected at the end of each trial and the data collected were interpreted for further analysis. The data collected were analyzed statistically to determine the effect of the different variables on the performance of the subjects. The data obtained from the subjects were subjected to statistical analysis and correlations were calculated for the different variables. Finally, two t-tests were conducted to test the significance of the differences between the control and rubber coated table tennis balls.

The values of ω_0 and τ_{c} were taken from the previous results of the same author for the same cement and are given in Table 1. A more detailed discussion of the experimental results can be found in Appendix 1. The formulations were developed and prepared by adding sand and cementitious materials or with the assistance of concrete service contractors. The mixes were tested at the recommended curing conditions for appropriate mixtures. The control formulation (CB) was used by a commercial company; the rate was based on the rheometer data obtained on the mix.

RESULTS OF EXPERIMENTAL WORK

Fingers on air cushion vehicles are subjected to very high frequencies of vibration for example, 200 cps at relatively large amplitudes. When rubber-coated fabrics are subjected to cyclic stresses through repeated or intermittent flexing, the development of cracks in the coating and delamination from the fabric become frequent causes of failure. During rapid flexing, the ability to sustain rapid strain rates and rapid strain recovery rates without crack formation is important. At higher rates of flexing, heat buildup may occur so that high temperature (60-100°C) low- EI properties may be important.

Desirable properties of polymer coatings have been inferred from current knowledge of the seal motions and observed damage. The polymer coating should have high flexural, compressive, and tensile fatigue resistance; high flex crack and crack arrest resistance; low flexural modulus; high impact resistance; high abrasion resistance; high tear strength; low hysteresis or excellent high temperature properties; high bond strength to itself and to nylon fabric reinforcement; and excellent environmental resistance (water, sunlight, ozone, fuel).

The principal criteria for evaluation of the polymers were comparisons of measured properties to the measured properties of known materials which had service evaluations. In the case of the rubber polymers, the known material was a natural/nylon/rubber blend formulation which was developed by Bell Aerospace Testron on rubber program and designated TCB-601. This formulation was coated on woven nylon mesh reinforced woven stable as bow and side fingers on the British SR.N4 cross-sealed test rig and on the Army LACV-3 experimental air cushion vehicle. Among castable materials, however, the known material was a polyurethane formulation developed by Bell Aerospace Testron and designated TACV-30. This formulation was coated on woven cloth form and used successfully as side fingers on an Army LACV-3. The woven cloth material used with the two different rubber coatings for the LACV-3 fingers had the same weight and configuration, and was designated fabric 1786.* This fabric is a 0.045 inch woven of "E" oz. dyed and was also used as the fabric in this program.

The work is reported under three tasks and five appendices. The experimental results are summarized and discussed in this section. The rationale for polymer

*Woven by Fibre Development Laboratory, Quakertown, PA.

INTRODUCTION

Surface effect ships and air cushion vehicles require a flexible seal or skirt structure to contain the cushion of air in which the craft is supported. The flexibility is necessary to minimize contact (reduce drag) between the vehicle structure and the surface being traversed, which is normally various types of ground terrain or water.

The flexible seals of these craft have typically been fabricated from rubber-coated woven fabric composite materials which were developed originally for applications such as conveyor belts and liquid storage containers. The air cushion craft are exposed to dynamic environments that are more demanding than those for the original applications. These more demanding requirements result from increased mechanical loads, from increased rate of load application, and from environmental extremes which may lead to intolerable or undesirable chemical and physical changes. Hence, substantial improvements of these flexible materials are required to provide adequate structural performance and long operational life with minimum weight and maintenance.

The objective of this program was to develop optimum rubber coatings for flexible seal/skirt applications for surface effect ships and vehicles. The primary emphasis was on new rubber formulations based on selected synthetic rubber polymers and/or stable fluid polyurethane polymers for use as woven fabric coatings. The program included a thermally conductive formulation, formulations for use without reinforcement (homogeneous materials), reinforcements other than woven fabrics, and evaluation of rubber-coated fabrics.

Rubber formulations were initially evaluated alone and then as coatings on woven fabrics. The evaluations were performed by using standard ASTM tests for selected mechanical properties. Since no correlation had been established between standard mechanical properties and service life on a vehicle, the evaluations were accomplished by comparing results from the experimental materials to results obtained from an existing natural/butadiene rubber blend-coated nylon fabric which had been used successfully on an Army LACV-30 air cushion vehicle. Test pieces and sample materials were fabricated for evaluation by Bell Aerospace Textron and the DTNSRDC Annapolis Laboratory.

FOREWORD

The high speed and versatility of Air-Cushion Vehicles (ACV) offer significant potential for military applications. However, in amphibious transit over land and water, the lower appendages, called fenders, are subjected to severe flexing and fatigue, starting at the time of the landing. As a result, craft performance is severely restricted by cycle cost increase. The objective of this exploratory development project was to develop sufficient information on fabric and coatings to guide subsequent selection of coated fabrics as fender materials for Navy air-cushion craft.

This volume, the first of three, describes a comprehensive evaluation of candidate fender materials for air-cushion vehicles. The approach taken, in which materials were screened in preliminary dynamic tests in order to identify candidates, further research, was a sensible and economic approach. Basically, in this work, the fabric was held constant and the coating was varied. Volume II of publication describes the effect from fabric structure on the performance of fender materials, where the coating was held constant and the fabric was varied. Natural rubber/polybutadiene blend coating was common to both endeavors and serves as reference or control during both efforts together. Volume III, to be presented, describes the coated fabrics as fender materials. Performance was evaluated at the Naval Surface Warfare Development Facility called the "Ordnance Test Center" for the development of operational air-cushion vehicles. The information contained in Volume III was used to define coated fabric constructions which were subsequently evaluated and tested as detailed in the third volume.

Performance evaluations performed after completion of the work reported here indicate natural rubber/polybutadiene blend formulations. This is because these materials offer the greatest resistance to fatigue. Although this report contains results which indicate that natural rubber/polybutadiene blend formulations do not necessarily offer the greatest resistance to fatigue, no correlation has been made between those results reported here and the subsequent testing.

THE PRACTICAL USE OF INFORMATION

the first report of the Bureau of Fisheries, which was submitted by Mr. W. C. Brewster, Commissioner of Fisheries, and was presented to Congress on January 12, 1887. This report is of interest, not only because it contains the first record of the occurrence of the fish in the Gulf of California, but also because it contains the first record of the occurrence of the fish in the Gulf of California.

$$S_1 = \{x_1, x_2, \dots, x_n\} \subseteq \{x_1, x_2, \dots, x_n\}$$

and the other two were sent to the Bureau of Fisheries at Gloucester, Mass., with a request that they be examined by the Bureau's experts. The Bureau's experts found that the fish were all of the same species, *Merluccius productus*, and that they were all of the same age, about 10 years old.

On January 20, 1945, Mr. George F. Smith, Agent in Charge, Bureau of Investigation, San Francisco, California, and Mr. George C. Kappeler, Agent in Charge, Bureau of Investigation, Seattle, Washington, were present at the office of Mr. Edward J. Powers, 100½ 1st Avenue, Seattle, Washington, where they observed the examination of the body of Mrs. Mary E. Powers, deceased, by Dr. Charles T. Ladd, Coroner's Pathologist, Seattle, Washington. Mr. Powers assisted in this work. Agent Kappeler also observed the examination of the body of Mrs. Powers.

and the effect of the various solid-fuel materials, property of the Bureau, on the performance of the aircraft. At the same time, office personnel conducted the development of the potential of the first tested experimental aircraft engine, the 100-hp. Pratt & Whitney Wasp Junior. A well-trained flight experimental flight test section was established immediately, facility for trials on the IEEE-UBC flight line, Atlanta, being available at the present moment in Fort Belvoir, Maryland. The 100-hp. Pratt & Whitney Wasp Junior, developed by the Bureau, the engine having a maximum thrust of 100 lb., was used in the University and Bals speedster, 100-hp. property, which was built at the Bureau's plant, College Park, Md. A special note of thanks goes to Mr. George E. Nichols, Office of Naval Supplies, Washington, D.C., Mr. R. H. Mandelsohn of the Bureau Materials Research Laboratory, Washington, D.C., and Mr. W. Denney Freeman of the Georgia Institute of Technology, Atlanta, Georgia, for their totesight and assistance throughout this project.

ABSTRACT

Twenty polymer formulations from ten selected gum rubber polymers or polymer blends and fourteen formulations of castable liquid polyurethane polymers were characterized as coatings for the coated fabric that is the type of material used to make flexible fingers for air cushion vehicles. The formulations were screened for crack growth and flexural fatigue resistance; the results were compared to results from natural rubber.

In addition, selected polymers were evaluated with static and low-strain characterization tests and the results compared to results from the coated formulation. Graphite black was used to evaluate the use of carbon blacked carbon black to improve thermal conductivity. Specifically, five of the polymer formulations and the control blend were applied to cotton fabric and evaluated.

Several polymers had better crack growth resistance than the control polymer. A castable polyurethane polymer coated on knit fabric had properties equivalent to the control polymer coated on knit fabric. Hysteresis tests at different rates of deformation yielded results which suggested that the standard tests may not identify polymers with expected performance on air cushion vehicles. Two polymer-coated woven fabric materials exhibited significantly lower tear strength at 1°C than at 70°C.

Woven fabric, knit, and tubular structures were evaluated as potential candidates for polymer coatings; the knit and tubular structures were not as efficient as a sheet of the woven fabric in reducing stiffness. Castable polyurethane was evaluated as a homogeneous material without filler reinforcement and was found to exhibit poor crack growth and flexural fatigue resistance.

Resilience results on the polymers (Yerzley method) are given in Table 6. In this test, an initial 5% compressive deformation is applied to the specimens; upon release, the specimen undergoes a train of cycles, which decay due to hysteresis. The results suggest that, in partial agreement with the Tiske results, one chlorinated polyethylene (CB1-191) is similar to the control formulation (ECB-00); the similarity exists in resilience velocity, recovery rate, and in the speed of rebound, for which CB1-191 exhibited a greater speed of recovery. The remaining non-rubber polymer exhibited less resilience than the control with recovery times both faster and slower than the control speed. Two of the polyethylenes (CB-183 and -190) exhibited excellent resilience rates of recovery well greater than the control; the remaining two polyethylenes (CB-185 and -198) straddled the control both in resilience rate and recovery, although the polymer with the higher resilience had the lower rate of recovery.

In all three of these dynamic tests, polymer deformation is compressive; in the triplexmeter is forced high cyclic-rate compression-compression, Tiske rebound is a single cycle compression, and the Yerzley rebound is a multiple cycle compressive deformation with the cyclic rate and number of cycles controlled by the viscoelastic properties of the polymer. Since polymer coatings on the seals of aircraft fuel cells are subjected to high cyclic rate and concurrent large displacement tension-tension, tensi-compression, and compression-tension cyclic stresses, results from the triplexmeter test may be the most important of the three tests. High cyclic-rate, large displacement tensi-extension fatigue tests also could have been done but these tests were beyond the scope of the program.

The thermal conductivity of three formulations was measured at each of two different temperatures to evaluate the use of a retinified carbon black to increase the thermal conductivity of polymer formulations. The three formulations were styrene-ethylene-butylene-styrene block copolymer (SEBS) with 2 parts per hundred parts rubber (pphr) antioxidant A-9, and 2 pphr Tinuvin 326; the same block copolymer formulation with 22 pphr Ketjenblack EC; and the control formulation ECB-00.

The thermal conductivity results are presented in Table 7.

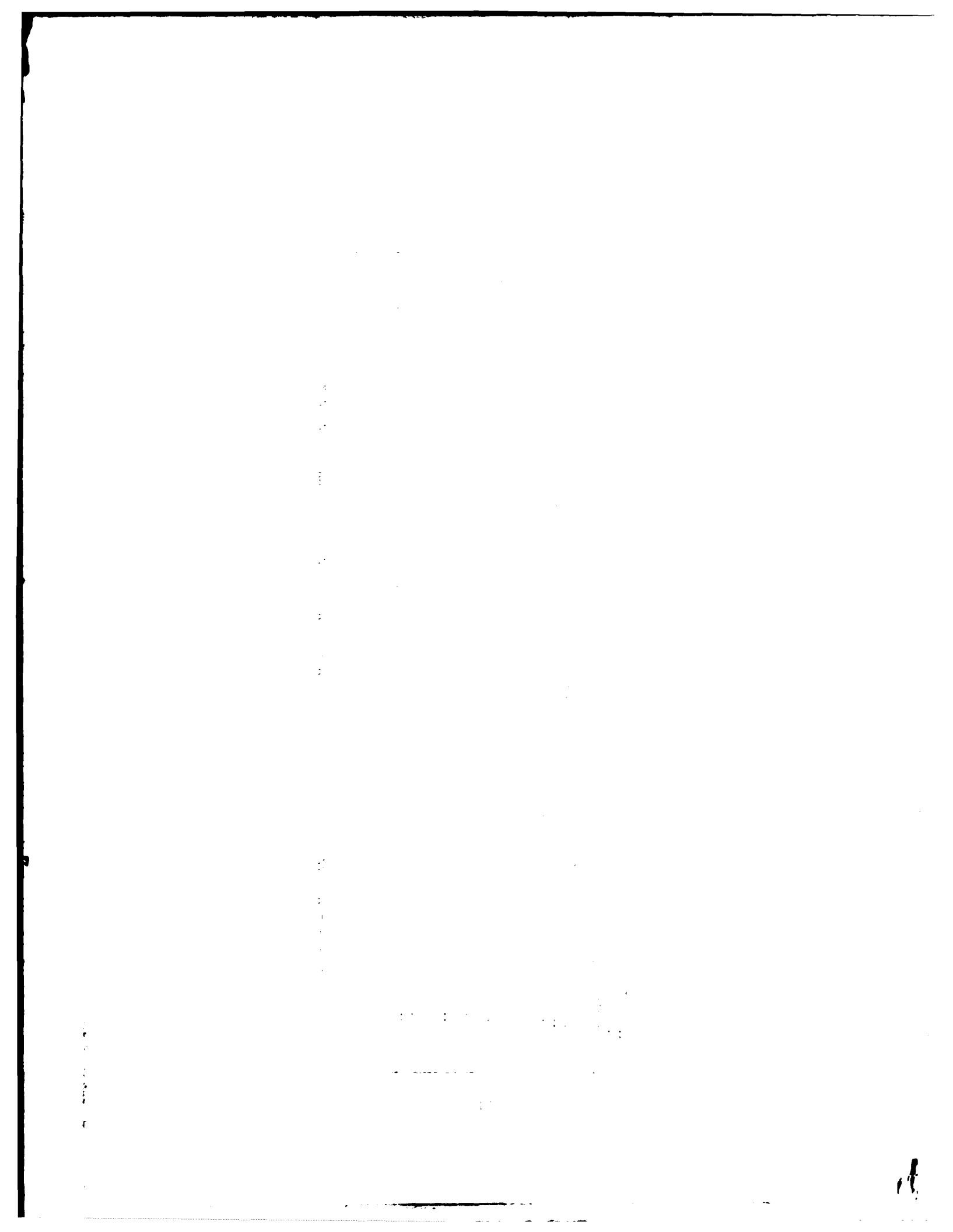
1. The first step in the process of creating a new product is to identify a market need or opportunity.

1. The first step is to identify the specific needs of the organization and the individuals involved.

For the first time in history, we have the opportunity to end poverty in our lifetimes.

the following year. The first two years were spent in the study of the history and literature of the country.

The following table summarizes the results of the time to determine



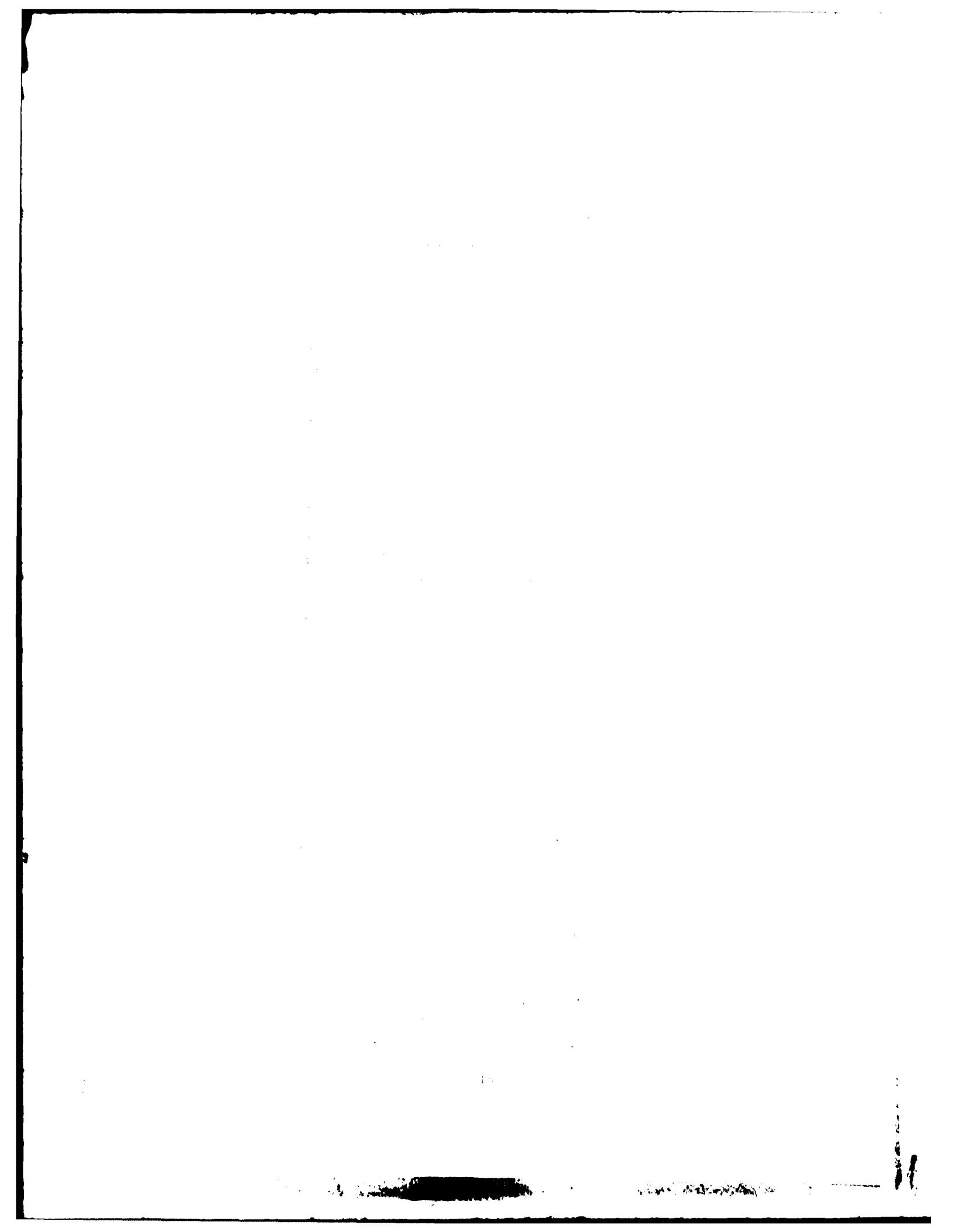


TABLE III - OPTICAL AND CRYSTALLINE PROPERTIES AND PERFORMANCE OF POLYMERS FORMULATED

The effect of rubber butadiene blend content on the fatigue properties was examined after the storage and elongation after one week at 100°C. It is evident, therefore, the rubbery polymer content is important for maintaining the fatigue resistance, however, the dependence of the durability on the rubber content is not clear. It may be explained that rubber content does not affect the fatigue resistance. It is reported that the fatigue resistance of the polyurethane polymer were dependent on the polymer and independent with the chain length which was measured. At the same time, little change was observed in the unmodified rubber and the rubberized polyurethane polymer content of the rubber content. The effectiveness of the copolymer seems to be where the rubber is randomly distributed. It is difficult to precisely assess fatigue resistance from the graph, however, the results of the other three polyurethane formulations.

The extreme and untoward weathering resistance of the control polymer acetone blend polymer was poor (Table 10), and all the other polymers and polymer blends exhibited better resistance than did the control. The propylene oxide (BA-EP) blend

The first step in the process of creating a new language is to identify the linguistic features that are most important for the language to serve its purpose effectively. These features may include the ability to express complex ideas, the ability to communicate across cultures, and the ability to be used in a variety of contexts. Once these features have been identified, the next step is to determine the specific rules and conventions that will govern the language's grammar, syntax, and vocabulary. This involves creating a set of guidelines for how words should be combined and how sentences should be constructed. The final step is to develop a system for teaching the language, so that it can be learned and used by people who are not native speakers.

The second set of samples was taken from the same locations as the first set, but at different times. The samples were taken at the end of the first week of the experiment, and again at the end of the second week. The results were similar to those obtained in the first week. The results of the first week are given in Table I. The results of the second week are given in Table II. The results of the third week are given in Table III. The results of the fourth week are given in Table IV. The results of the fifth week are given in Table V. The results of the sixth week are given in Table VI. The results of the seventh week are given in Table VII. The results of the eighth week are given in Table VIII. The results of the ninth week are given in Table IX. The results of the tenth week are given in Table X. The results of the eleventh week are given in Table XI. The results of the twelfth week are given in Table XII. The results of the thirteenth week are given in Table XIII. The results of the fourteenth week are given in Table XIV. The results of the fifteenth week are given in Table XV. The results of the sixteenth week are given in Table XVI. The results of the seventeenth week are given in Table XVII. The results of the eighteenth week are given in Table XVIII. The results of the nineteenth week are given in Table XVIX. The results of the twentieth week are given in Table XX.

As a result, the market was able to quickly identify the new information and adjust its price. The market's reaction to the new information was immediate, reflecting the market's efficient use of available information.

1990-1991 CANADA AND THE UNITED STATES

TABLE II
TESTS ON RUBBER COATED FABRIC

Polymer	Fabric	Test	Temperature	Ultimate		Tear	Coating**
				Strength (lb/in.)	Elongation (%)		
EB-100	WHT	49° C (120° F)	1000	108	38	16	1lb/in. 100%
		74° C (170° F)	1000	100	33	476***	
		111° C (230° F)	1000	98	29	—	
EP-100	WHT	49° C (120° F)	840	26	55	—	
		74° C (170° F)	860	27	50	—	
		111° C (230° F)	860	19	18	—	
PA-100	WHT	49° C (120° F)	1000	17	—	—	
		74° C (170° F)	1000	29	14	—	
		111° C (230° F)	96	32	14	—	
PE-100	WHT	49° C (120° F)	1000	113	29	11	—
		74° C (170° F)	113	17	56	—	
		111° C (230° F)	107	26	113	—	
PA-100	WHT	49° C (120° F)	1000	118	4	—	
		74° C (170° F)	115	4	—	—	
		111° C (230° F)	116	4	—	—	
PE-100	WHT	49° C (120° F)	1000	118	39	9.1*	—
		74° C (170° F)	116	27	56.7	—	
		111° C (230° F)	114	30	56.7	—	
PA-100	WHT	49° C (120° F)	1000	114	46	—	
		74° C (170° F)	117	40	—	—	
		111° C (230° F)	test not performed	—	—	—	
PE-100	WHT	49° C (120° F)	114	29	44	—	
		74° C (170° F)	117	33	63	—	
		111° C (230° F)	test not performed	—	48 ***	—	
PA-100	WHT	49° C (120° F)	118	6	—	—	
		74° C (170° F)	117	30	—	—	
		111° C (230° F)	116	30	—	—	
PE-100	WHT	49° C (120° F)	1080	17	—	—	
		74° C (170° F)	1140	17	—	—	
		111° C (230° F)	1120	27	113	—	
EP-100	WHT	49° C (120° F)	1000	29	—	—	
		74° C (170° F)	1000	27	—	—	
		111° C (230° F)	1000	27	—	—	

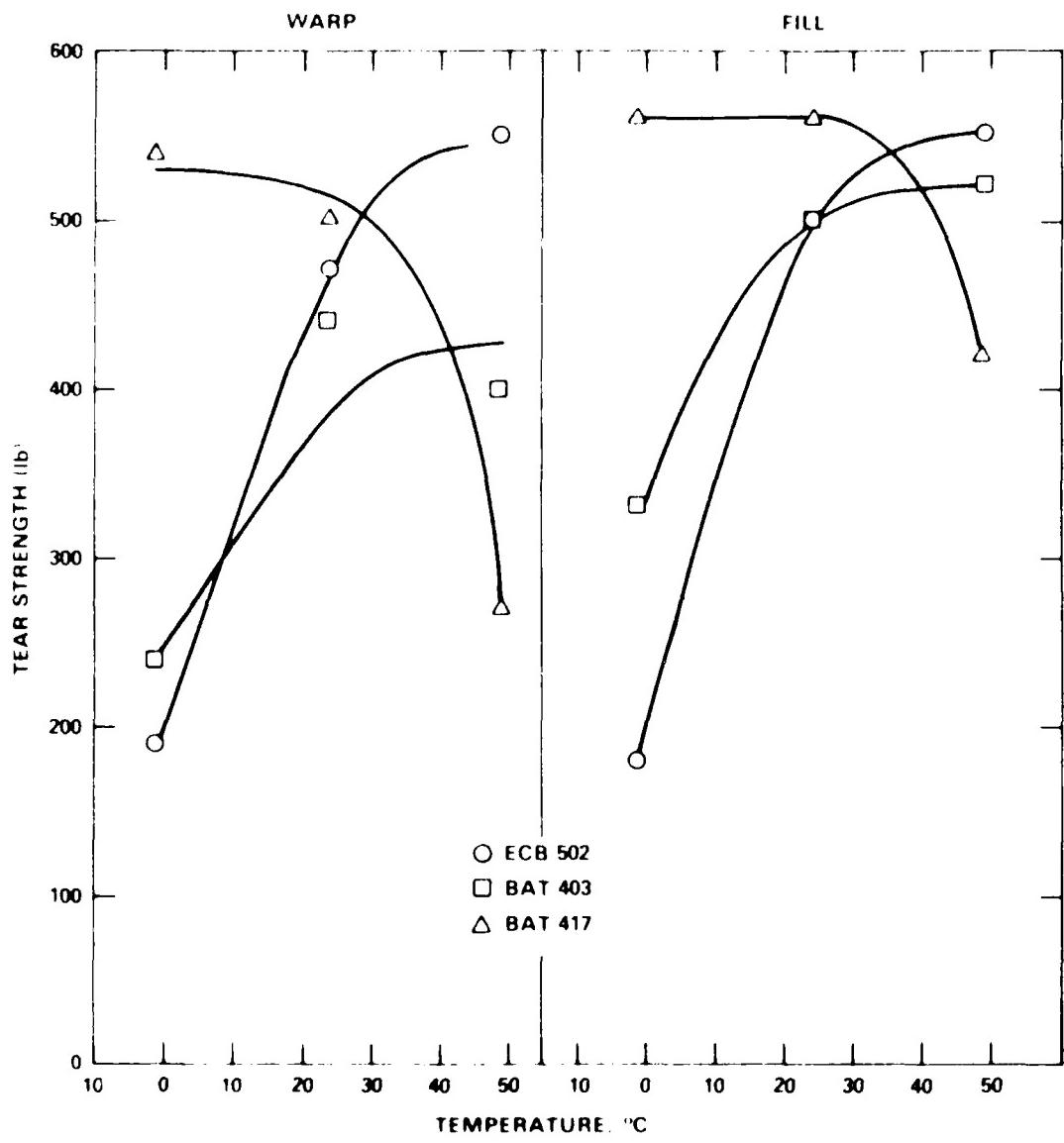
*The nylon covered fabric was 1/8" x 1/8" basket weave of 150 gsm obtained from Eshbach Sewed Point Laboratories, Maketown, PA, with their designation of 188.

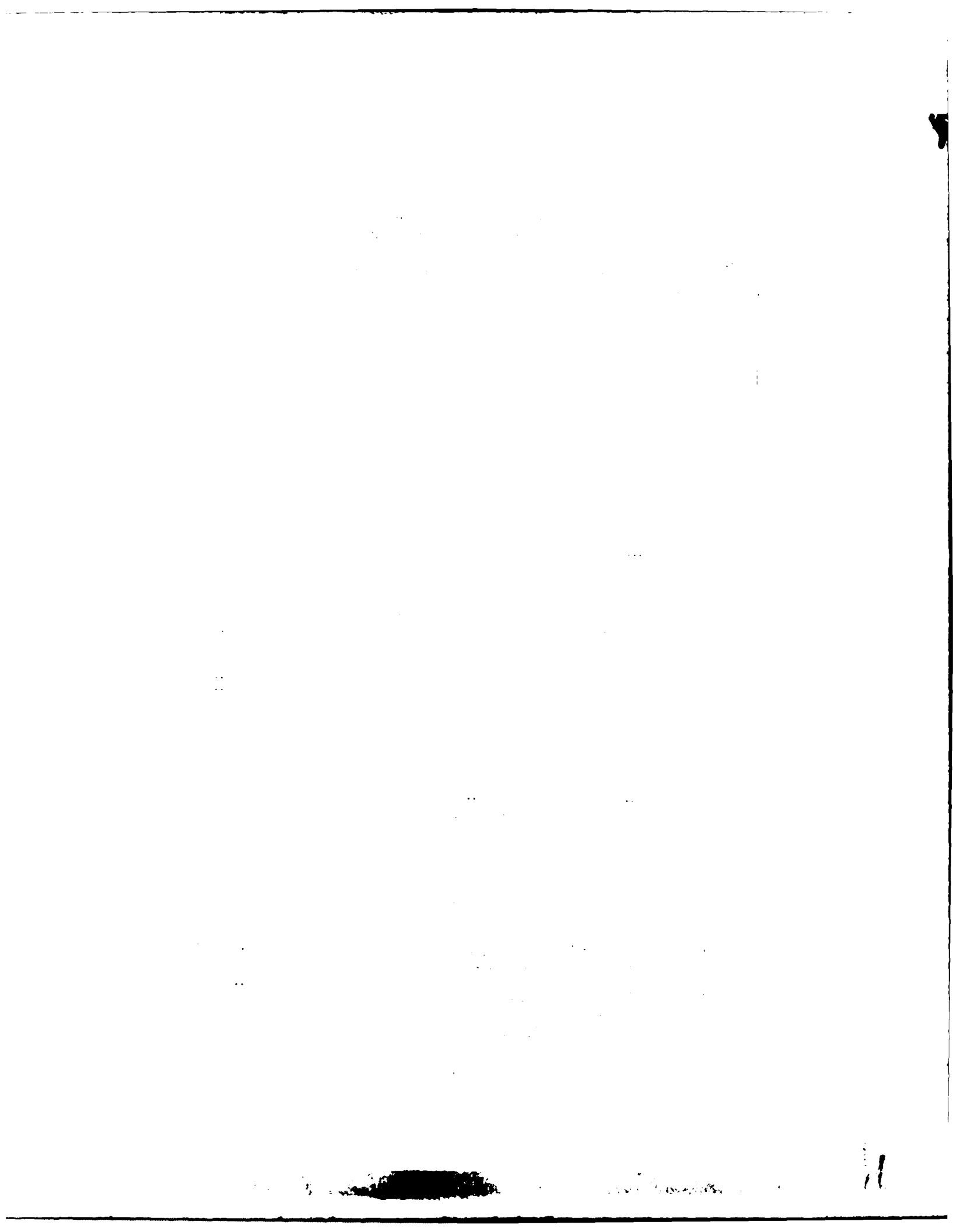
**The coat (EB-100) was used to bond the gum rubber polymers to the fabrics and Ulate 100 was used as an adhesion promoter with the polyurethane polymers.

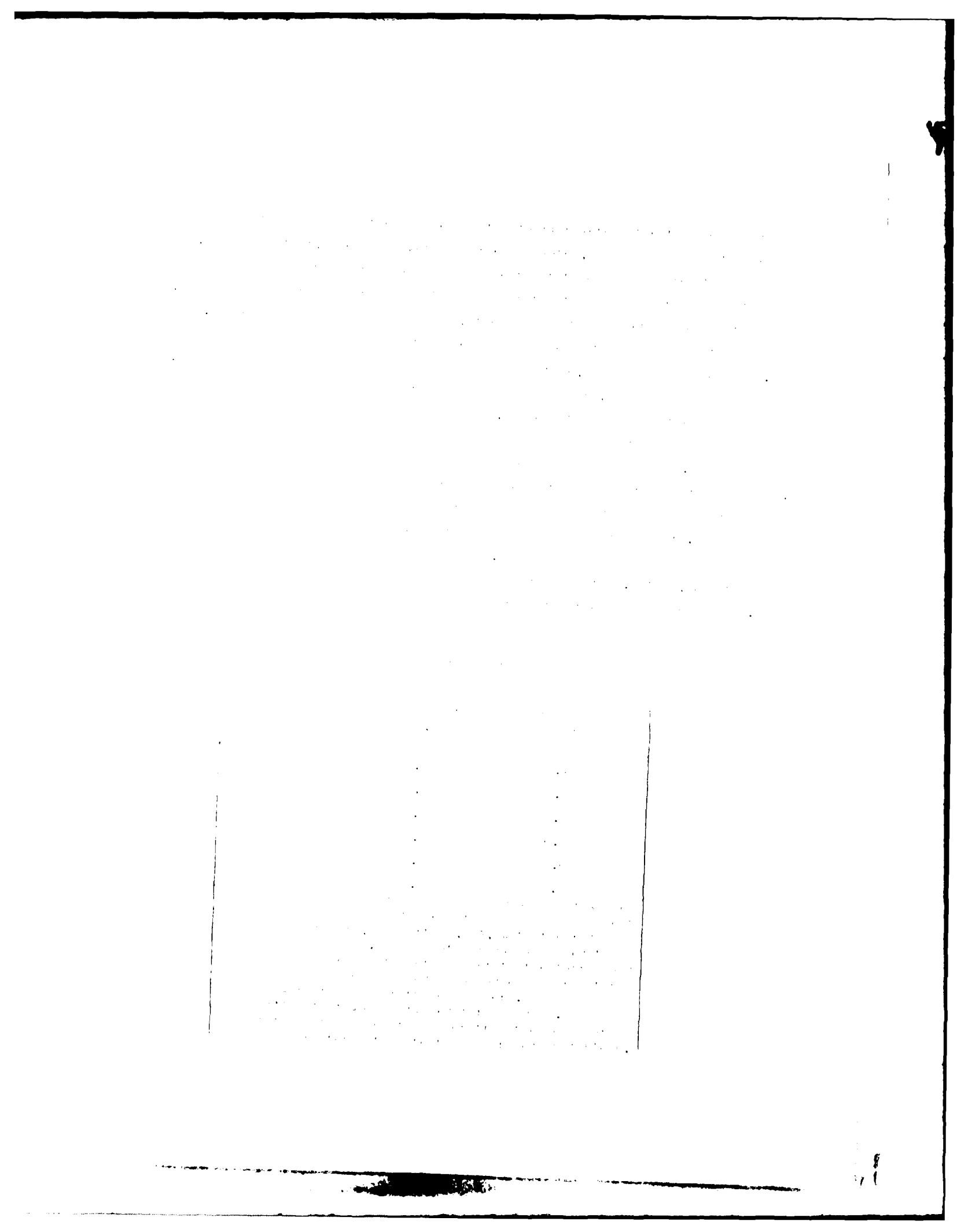
***Nylon cord partially pulled through the rubber and partially broke.

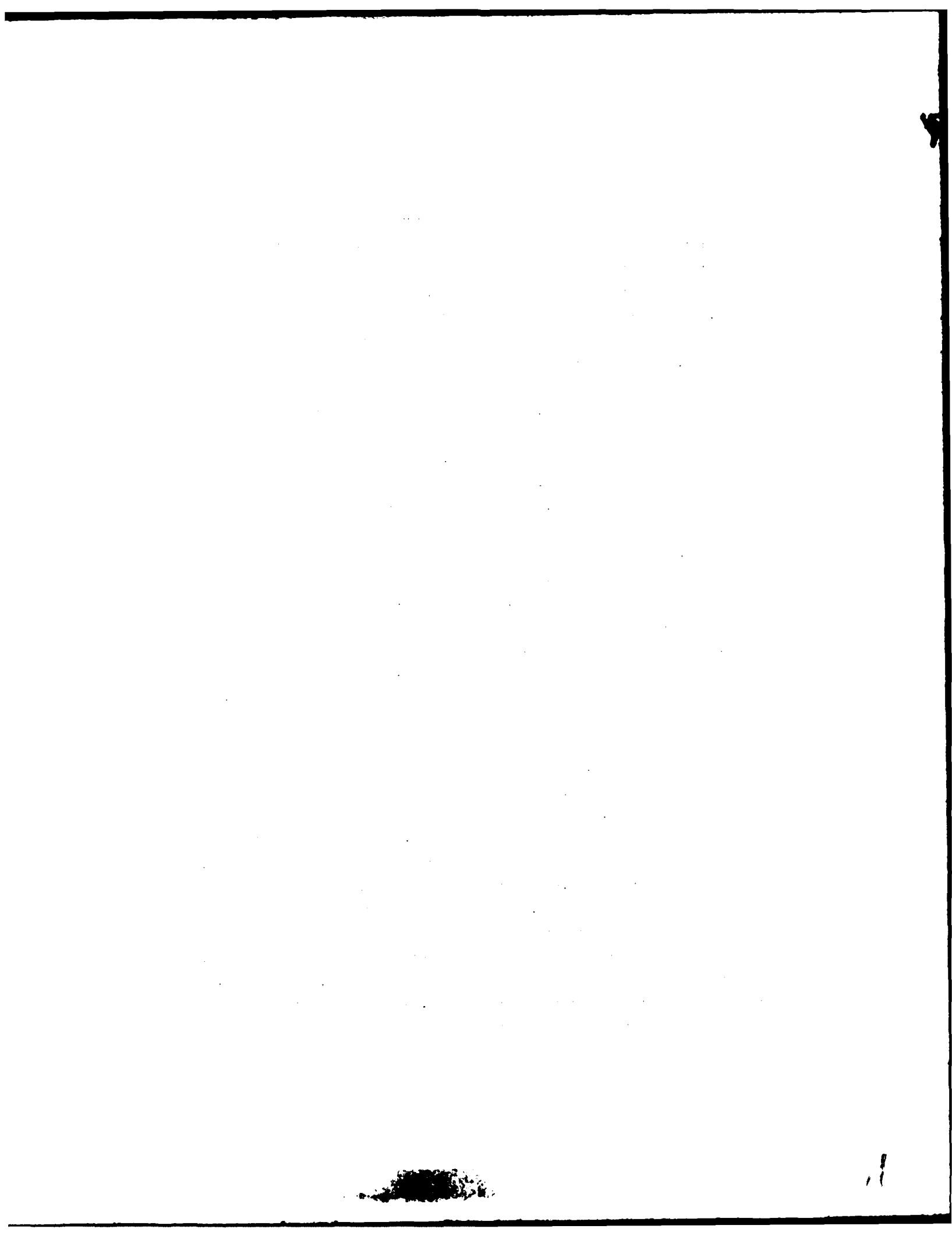
Nylon cord pulled through the rubber and did not break.

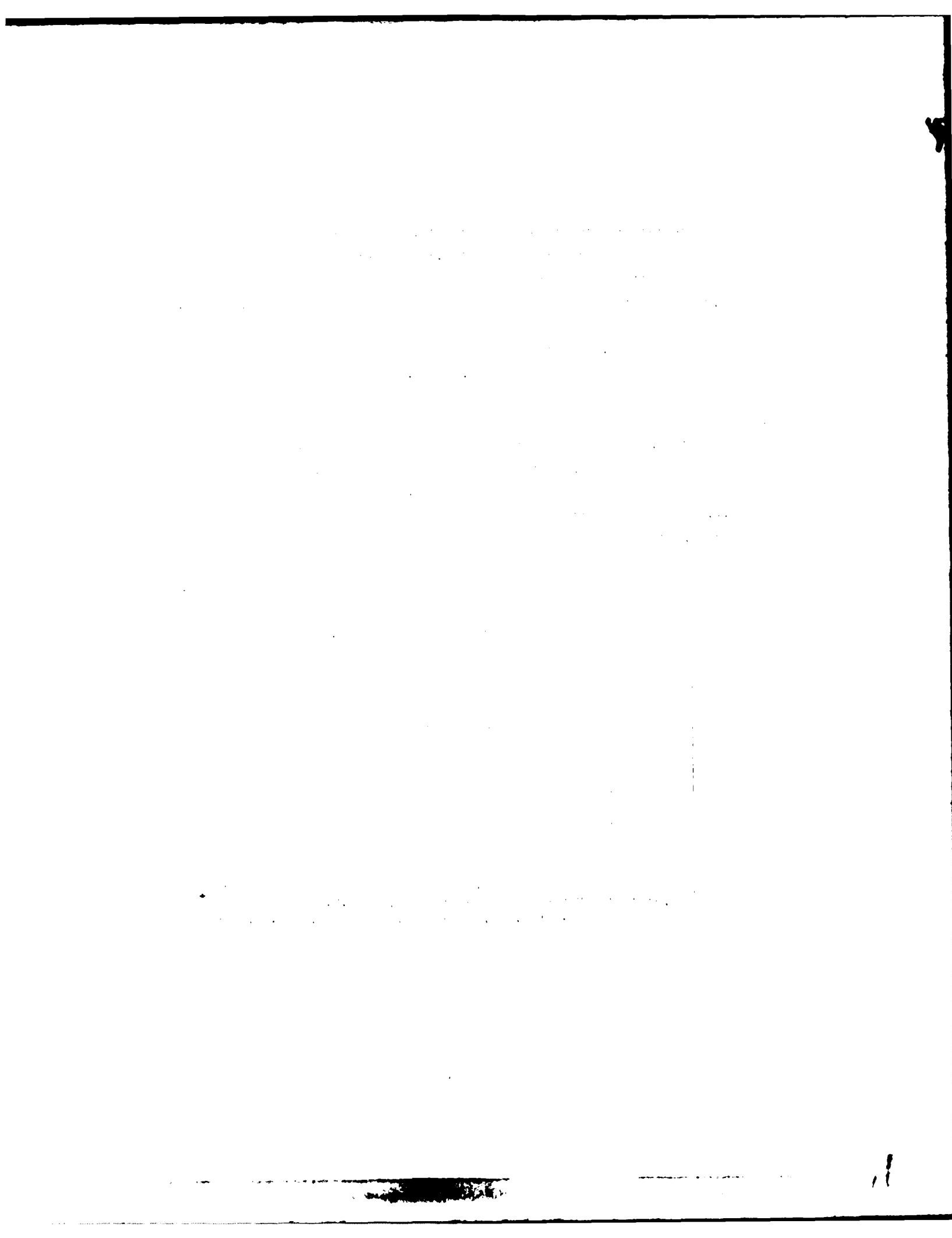
**The Neoprene rubber-like coat retarded the cure of the chlorinated polyethylene at the interface so that the chlorinated polyethylene remained a thermoplastic at the interface which softens markedly between 40° C (104° F) and 49° C (120° F).

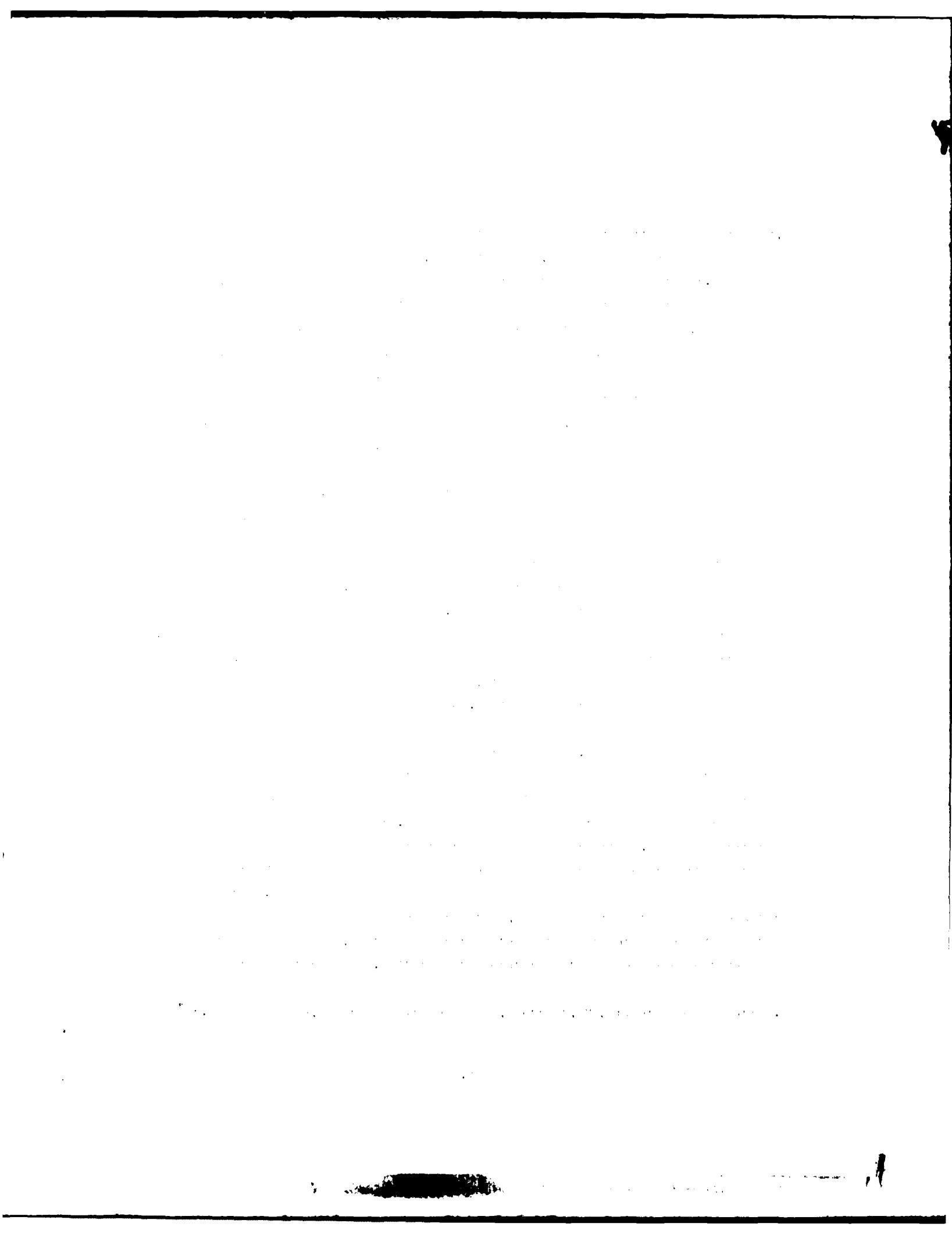












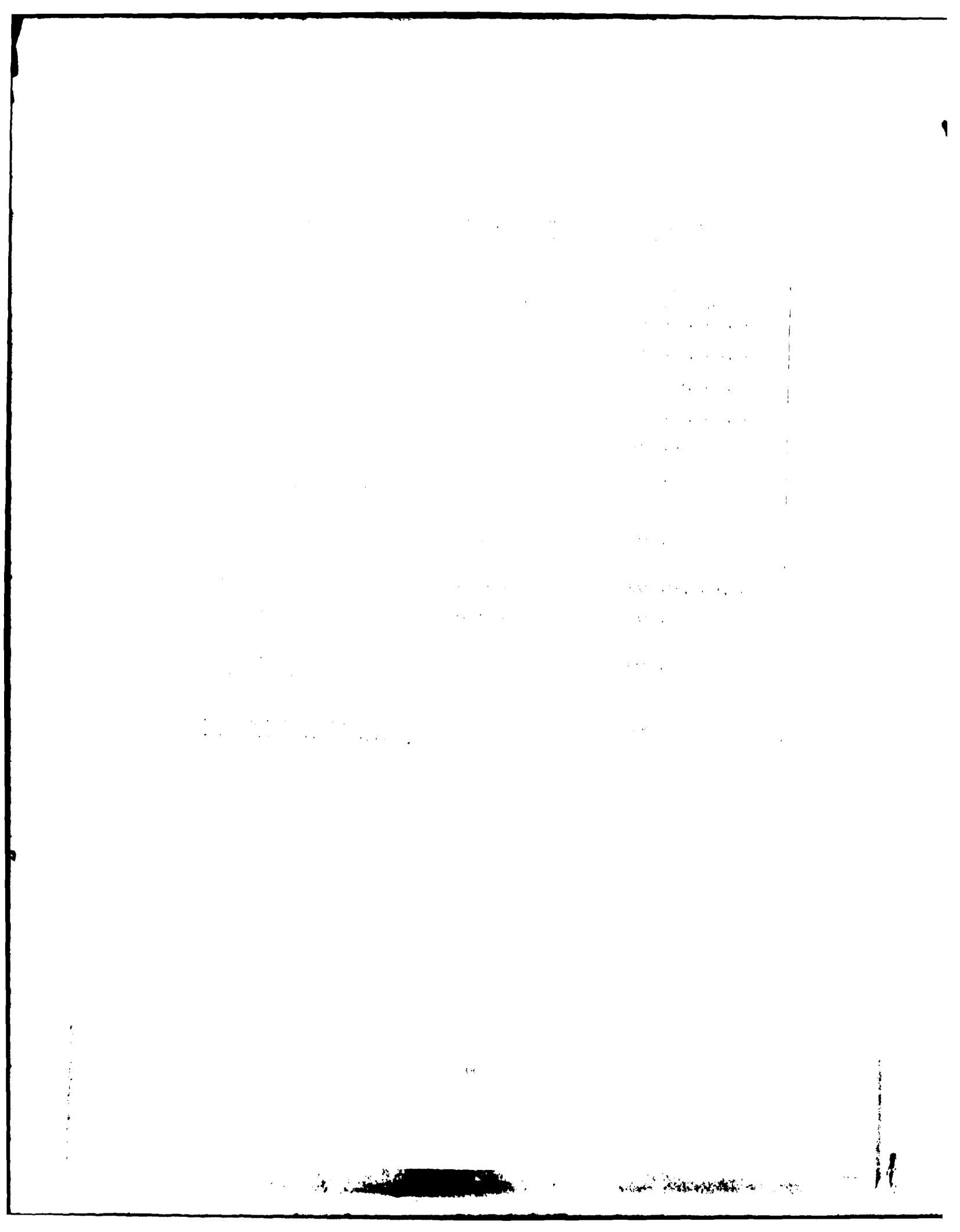
11. *Leucosia* *leucostoma* *leucostoma* *leucostoma*

After the initial wash, the samples were dried and cut into small pieces. These pieces were then washed again with acetone and dried. This process was repeated until the weight of the sample did not change. The final weight was recorded.

TABLE I. COMPOSITION OF POLY(1,4-PHENYLENE TEREPHTHALATE)

Component	Parts by weight
1,4-Phenylene diamine	1
Crotonic acid	1
Acetone	1
Weight Percent	
1,4-Phenylene diamine	10
Crotonic acid	0.3
Acetone	0.7
Alfa-cellulose film polyvinyl acetate -PAPF (just before use) Heat set 26 min at 157°C (Cer-THERM)	98.9

ANSWERING THE QUESTION OF CONVERGENCE FORMULATION FOR EQUATIONS



APPENDIX A

卷之三

Consequently, the influence of solvents on the development of the crystallization was studied on various polyesters. The results are summarized in Table VI. It can be seen that the crystallization rate of the polyester is increased by the addition of solvents such as benzene or xylene. However, the crystallization rate of the polyester is decreased by the addition of polar solvents such as acetone or methanol.

The formulation of the rubber-butadiene polymer blend polymer 201-3 was an improvement from the reference polymer 201-1, as indicated previously. The contents of this formulation are shown in Table 1. A comparison of this formulation with different antiseptics and antifoulants is shown in Table 2. The latter materials evaluated to date for filters on the ship were evaluated in the KODAK ACT 300 antifouling vehicle. The formulation was evaluated in the Activation Test portion of the Large Surface Effect Ship Program.

The various antifoulants were evaluated with initial screening tests and the best candidates from the results of the general rubber-butadiene polymer blend polymer 201-3. The six best formulations were selected and evaluated further with the relevant characterization tests (Appendix C) and the results compared to the results obtained from the control polymer formulation. The three best formulations were selected and together with the control formulation, used as materials for mechanical testing. The coated fabrics were characterized with property tests as shown in Appendix C.

(c) Polymers reinforced with knit and mat structures do not exhibit as good tensile shear strength as polymers reinforced with woven fabric for the same weight of reinforcement.

(d) A relatively thin polyethylene was developed which had relatively good tensile shear strength against weathering but the thermal stability and mechanical properties were relatively poor.

(e) A relatively thin sheet of polymer formed from polytetrafluoroethylene had relatively good tensile durability after being cold compressed at 100°C. and then subjected to a 100°C. temperature rise caused by heating in the oven.

(f) The following is a brief description of methods of preparing fiber-reinforced polymers for use in the manufacture of the reinforcement of sheets of plastic materials:

1. Knit Reinforcement (see Appendix 1).

* The results of this study, the irradiated 100% natural rubber blend, and the 100% natural rubber/10% chlorinated polybutadiene/styrene copolymer blend, were all quite similar, equivalent to the natural butadiene blend control. They exhibited relatively good resistance to cracking resistance to fuel, and relatively poor resistance to volatile liquid petroleum hydrocarbons. The latter and somewhat better resistance to fuel.

• All of the polymer-coated fabrics showed rather good weathering resistance to the standard U.V. test, but it was evident that what constituted polymer resistance, was not necessarily the same as the physical properties of the polymer itself. The polymer-coated fabrics exhibited the better and more extensive protection against the sun's rays.

* Irradiation of the 100% natural rubber blend with gamma radiation, while it did not significantly increase the weight loss of the coated fabrics, did significantly reduce the weight loss of the uncoated fabrics.

* Results of the different evaluations of coatings indicate that after irradiation, the chlorine content suggests that these tests may be of little value in evaluating which would impart best performance in an anti-cracking order.

* In the first series of studies, evaluation of polymer-coated woven fabrics, the 100% natural rubber blend, the 100% natural rubber blend with 10% chlorinated polybutadiene, and the 100% natural rubber blend with 10% chlorinated polybutadiene and 10% styrene, were evaluated. The results indicated that each sample reacted with the natural rubber in a different manner. The notable difference between the different materials was the extent to which they reacted with the natural rubber.

* In the second series of studies, evaluation of polymer-coated woven fabrics, the 100% natural rubber blend with chlorinated polybutadiene copolymer, and the 100% natural rubber blend with 10% chlorinated polybutadiene copolymer, were evaluated. The results indicated that the chlorinated polybutadiene copolymer was somewhat more resistant than the chlorinated polybutadiene blend with 10% styrene. The latter blend, the results also showed that the coated fabrics were more effective in the wind direction than in the full direction, in a cross direction, which was unity.

* Irradiation of materials that are unstable 100% polyurethane polymers could not be developed with properties equivalent to polymer-coated woven fabrics; polymer-coated woven fabrics exhibited such superior thermal stability and crack or wrinkle resistance, flexibility, and flame resistance.

CONCLUSIONS

(1) Results from laboratory tests at -50°F on 20-mm rubber formulations prepared from 10 synthetic polymer or polymer blend systems indicated that: (a) two of the formulated polymer systems (carboxylated nitrile and chlorinated polyethylene) had rates of growth resistance greater than that of the control polymer blend (natural rubber/butadiene); and (b) six of the formulated polymer systems (carboxylated styrene, tri-n-butyl natural rubber EPDM blend, SB block copolymer SBR blend, 98 block carboxylated styrene, chlorinated polyethylene, phosphor trifluoride fluorocastomer) had the same crack resistance greater than that of the control polymer blend.

(2) Results from laboratory tests at -50°F on a variety of liquid-crystalline polyisobutylene elastomers prepared from three different polyisobutylenes, four different diisocyanates, and four diamine or di alcohol curatives indicated that all eleven liquid-crystalline formulations had better crack growth resistance than the control polyisobutylene polymer (BAI-Et₂P). An 83° wave test simulation had better crack resistance than the control and one formulation had about the same flexural fatigue resistance as the control.

(3) Nylon woven fabric coated with the natural rubber/butadiene blend control formulation exhibited a marked reduction in tear strength at -110°F compared to tear strength at room temperature. Similar effects, but to lesser degrees, are exhibited by the tri-n-butyl EPDM/natural rubber blend-coated woven fabric at -110°F and the SB block copolymer/natural rubber blend-coated woven fabric at -20°F. The reduction in strength appears to be caused by a molecular change of the polymer such that the polymer causes the fibers in the yarn bundles to fail somewhat incompletely. For complete characterization, polymer-coated woven fabrics should be evaluated for mechanical properties over the range of temperatures anticipated for aircraft in-service use.

(4) Retreaded carbon black appears to more effectively increase the thermal conductivity of polymers than regular reinforcing carbon blacks. Since retreaded carbon black is reinforcing for most polymers, a detailed study is necessary to compare with reinforcing carbon blacks to determine the optimum mechanical and thermal properties can be obtained concomitantly with improved thermal conductivity.

(5) Based on the Riso laboratory abrasion test, the SB block copolymer/natural rubber polymer blend had superior abrasion resistance compared to the natural rubber/butadiene blend control polymer, and one castable liquid-polyurethane polymer exhibited better abrasion resistance than the control.

1. The first step in the process of determining the best way to approach a problem is to define the problem. This involves identifying the key issues, constraints, and goals of the situation. It is important to have a clear understanding of what needs to be accomplished and what factors may impact the outcome.

2. Once the problem has been defined, the next step is to generate potential solutions. This can be done through brainstorming sessions, research, or consultation with experts. It is important to consider a variety of options and evaluate them based on their feasibility, cost, and potential impact.

3. After generating potential solutions, the next step is to evaluate them. This involves assessing each option's strengths and weaknesses, as well as its potential outcomes. It is important to be objective and thorough in this evaluation process to ensure that the best solution is selected.

4. Once a solution has been selected, the next step is to implement it. This involves developing a plan of action, assigning responsibilities, and monitoring progress. It is important to communicate the plan clearly and provide support and resources to those involved in the implementation process.

5. Finally, the last step is to evaluate the results. This involves measuring the success of the solution and making any necessary adjustments. It is important to learn from the experience and use it to inform future decision-making processes.

strengths obtained are presented in Table 17. The materials are prepared by a manufacturer which features a lock-stitch that prevents unraveling. The polyester was selected for use in this program since it possesses strength approaching that of cotton both warp and fill directions but at a fabric weight of only 14.7 gms per square meter, or 1/10 of cotton. The manufacturer advised that the strength of the knit should be greater than that of any polyester or better than that of the cotton.

As can be seen from Table 17, the polyester knit material generated with formulation No. 10 had the highest tensile strength. The unmodified formulation No. 10 also was cast, dried, and tested. It was found that the unexpected properties of the polyester were due to the presence of 2% of the overmodified cellulose polymer. The polyester had the lowest tensile strength than that of the unmodified cellulose polymer. (See Table 17, Appendix B.)

TABLE 17. Tensile Strengths of Nylon/Woven Polyester Knits

Fabric	Weight (gms per square meter)	Tensile Strength (lb)		Warp	Fill	Burst (lb)
		Warp	Fill			
Woven	14.7	10.4	9.6	10.4	9.4	10.4
Knit	14.7	10.1	9.9	10.1	9.7	10.0

The unmodified woven reinforced PPS polymer was tested at three temperatures. The tensile and bursting strengths of the woven fabric reinforced polymer results are presented in Table 18. A comparison of the results are presented in Table 19. Since the reinforcing effect of the tensile and tear strength of reinforced polymers, the results are compared to the results obtained on woven fabric reinforced PPS polymer. A comparison of the results shows that the knit reinforced PPS has a higher tensile and bursting strength than the tear strength of the woven fabric reinforced polymer at approximately the same total filament weight. However, the bursting strength of the knit is approximately three times greater than the woven fabric reinforced polymer. While the tearing modulus value for the knit material appears to be only one quarter that of the polyester knit, these large areas of stress indicate that the test for the case is meaningful besides strength of the polymer material other than the force required to peel the elastomer from the knit. A knit reinforced structure has not yielded as efficient reinforcement as a woven fabric on a strength-to-weight basis.

After the war, the U.S. government established the American Battle Monuments Commission to maintain and administer the cemeteries.



Mr. Paul L. Felt, Secretary, Fort Belvoir, VA.

SBW copolymers have a more brittle character than styrene- α -methylmethacrylate thermoplastics, which become increasingly brittle with temperature, but such compounding is necessary to obtain the best mechanical properties. The tensile shear modulus is relatively insensitive to temperature over a wide temperature range, -10° to 80°C. and the like. Above 80°C. (176°F.), the modulus drops rapidly and the material becomes soft at 150°C. (302°F.). This imposes a service temperature ceiling similar to that for flexible thermoplastics and considerably lower than that for vulcanized rubbers. SBW block copolymers have dynamic properties very

the patient's condition, and the patient's family. The patient's family will be asked to provide information about the patient's medical history, including any previous hospitalizations, surgeries, and treatments. The patient's family will also be asked to provide information about the patient's social history, including any previous substance abuse, mental health issues, and family history of mental health issues.

But rubber was used to no avail. The stiffness of 1000 c.p.s. is about as great as natural rubber, or by its tear strength, but the polymer has much longer wear after loss of its room temperature. But rubber has much better resistance to heat than the natural rubber and about the same poor resistance to hydrocarbons. The rubber does not bond readily to reinforcements so developing acceptable rubber composites may be a problem.

that the *h* value of the water-soluble polymer was higher than that of the hydrophobic polymer, indicating that the water-soluble polymer had better water resistance and better thermal stability. The inherent water absorption resistance was also a better indicator of the water resistance of the polymer. The inherent water absorption resistance of the hydrophobic polymer was higher than that of the water-soluble polymer, indicating that the hydrophobic polymer had better water resistance.

the first time in the history of the state, a trial of the kind.

the first time in history that the people of the United States have been compelled to pay a tax on their property, and that they have been compelled to do it by a law which they did not make, and which they did not consent to, and which they did not ask for.

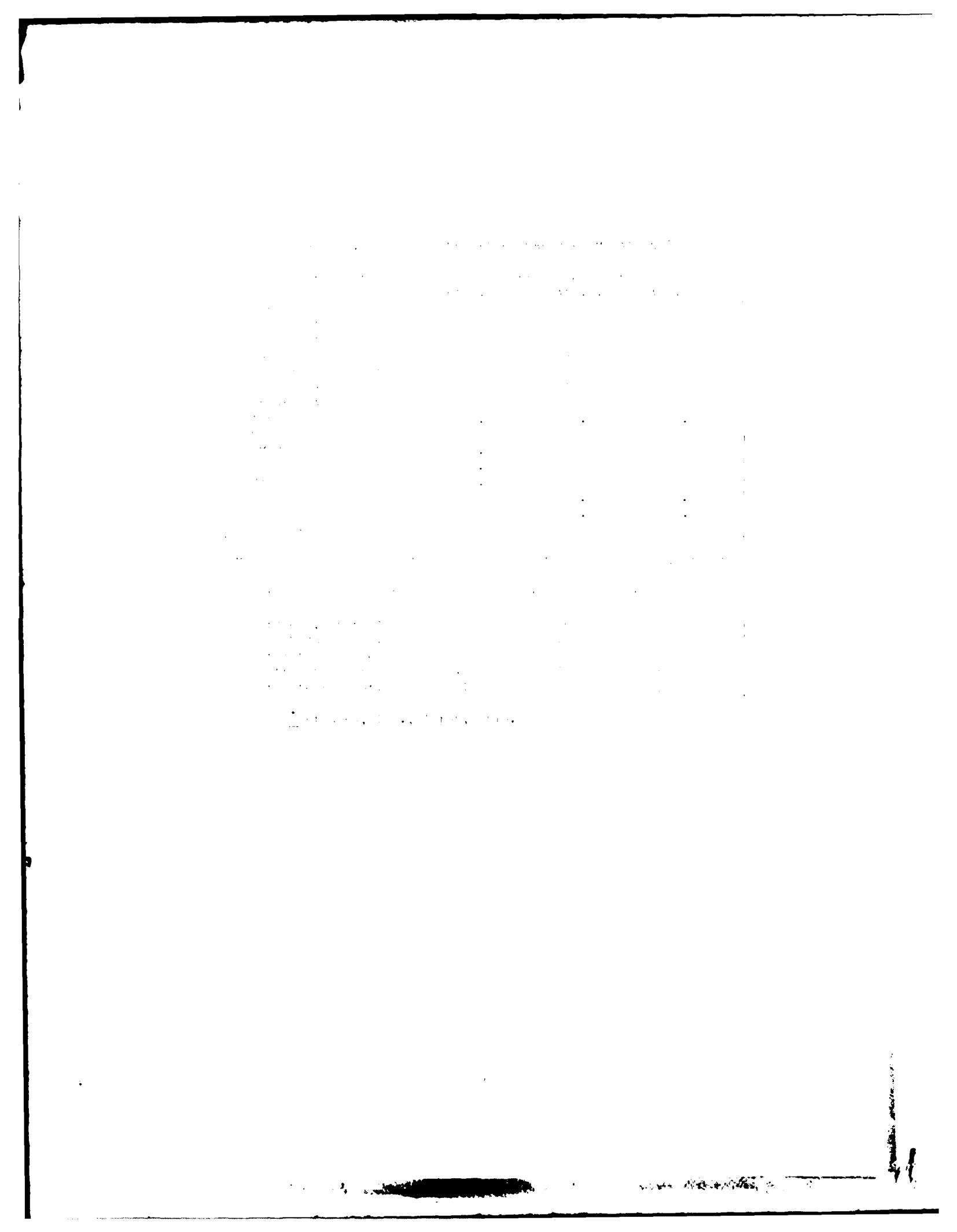
and the first stage of the water treatment process. The treated water is then distributed to the city via a network of pipes. The treated water is then used for various purposes such as drinking, bathing, washing, and irrigation. The treated water is also used for industrial purposes such as power generation, chemical processing, and pharmaceuticals.

Consequently, the main goal of this paper is to propose an improvement in the visual representation.

The volume profile was evaluated for sensitivity to core pressure using interactive methods of graphical optimization, and the results are presented in Figure 10, showing the sensitivity to core pressure with respect to

TABLE A-6. BROMOBUTYL RUBBER FORMULATIONS*

Chemical Name	Formaldehyde Dose (mg)		
	BAT 400	BAT 400	BAT 400
Bromobutyl 3	0.0	0.0	1.00
Eugenol 3	1.0	0.0	0.0
SMK 3	0.0	0.0	0.0
Isoborneol 3,4-piperidinedione	0.0	0.0	0.0
N-Butyl acrylate	0.0	0.0	0.0
N-Butyl caproate	0.0	0.0	0.0
Caprylic acid 3	0.0	0.0	0.0
Caprolactam 3	0.0	0.0	0.0
Caprylic acid 3	0.0	0.0	0.0
Cetyl alcohol 3	0.0	0.0	0.0
Cyclohexanone 3	0.0	0.0	0.0
Acetone 3,4-dimethyl	0.0	0.0	0.0
Dimethyl sulfoxide 3	0.0	0.0	1.00
Formaldehyde 3	1.0	1.0	0.0
Isoborneol 3	0.0	0.0	0.0
Isoborneol 3,4-dimethyl	0.0	1.00	1.00
Isoborneol 3,4-dimethyl	0.0	1.00	1.00
Isoborneol 3,4-dimethyl	0.0	1.00	1.00
Isoborneol 3,4-dimethyl	0.0	1.00	1.00

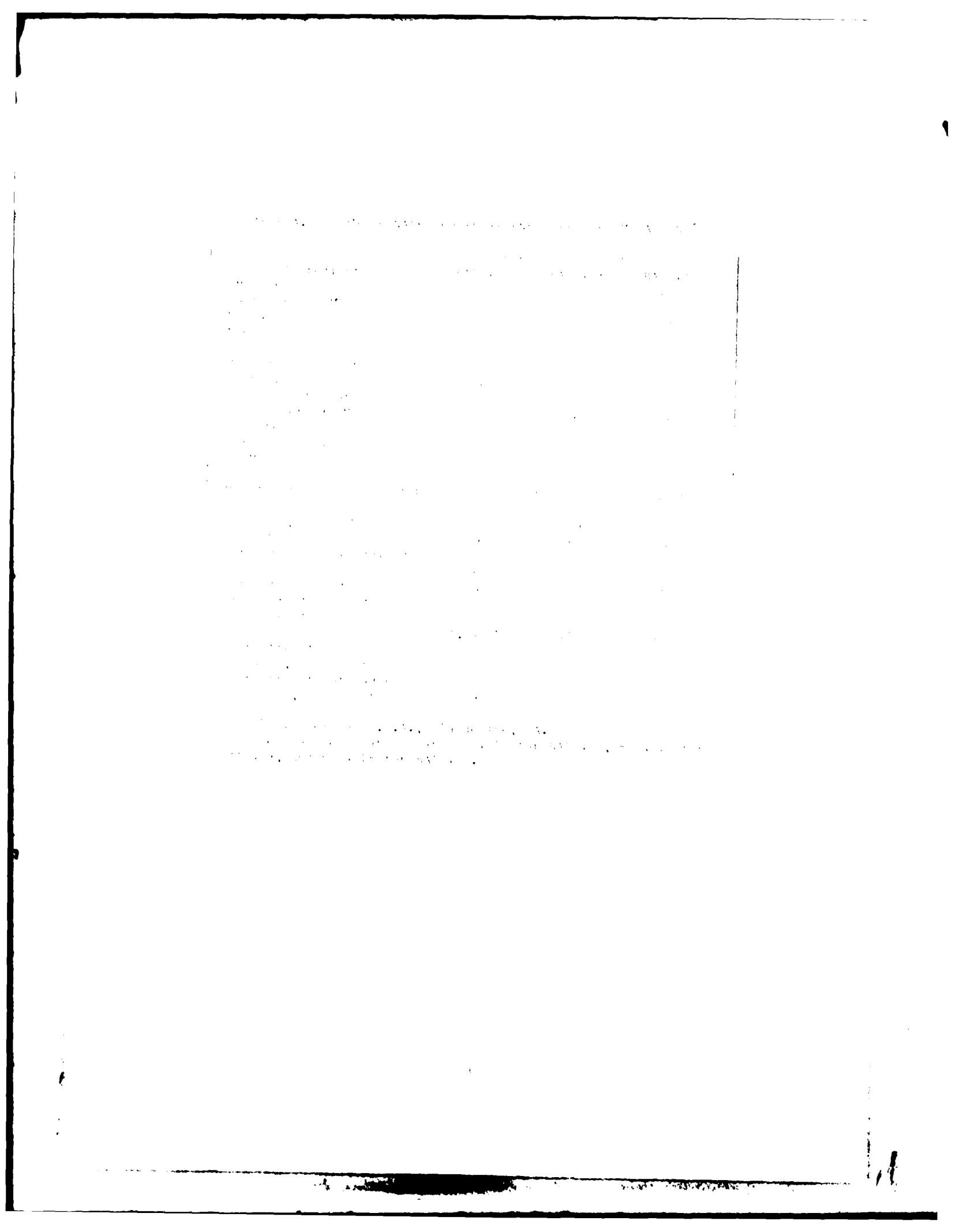


CHAPTER 3. BIBLICAL KINSHIP FORMULATIONS

Fig. 1. The effect of the addition of 10% of polyacrylate on the viscosity of the polymer solution.

Chemical name	Formula or chemical designation
Nitrogen	•
Hydrogen	•
Neon	•
Argon	•
Helium	•
Methane	CH ₄
Propane	CH ₃ CH ₂ CH ₃
Butane	CH ₃ CH ₂ CH ₂ CH ₃
Acetone	CH ₃ C(CH ₃) ₂
Acetate	CH ₃ C(CH ₃) ₂ OOC-
Acetyl	CH ₃ C(CH ₃) ₂ OOC-
Acetoxyl	CH ₃ C(CH ₃) ₂ OOC-
Acetoxy	CH ₃ C(CH ₃) ₂ OOC-
Acetyl oxide	CH ₃ C(CH ₃) ₂ OOC-
NA-12	•
Altox	•
EDTone	•
Sulfur	•

*Phenylps Chemical Co., Stow, OH.
Phenylps Chemical designation is
DOD-125.



Journal of Oral Rehabilitation 2003; 30: 1093–1099 © 2003 Blackwell Publishing Ltd

General Development

THE MUSEUM OF SCIENCE AND INDUSTRY, MANCHESTER

10. *Journal of the American Statistical Association*, 1933.

APPENDIX B
EXPLANATION OF TESTS

TESTS FOR SUGAR

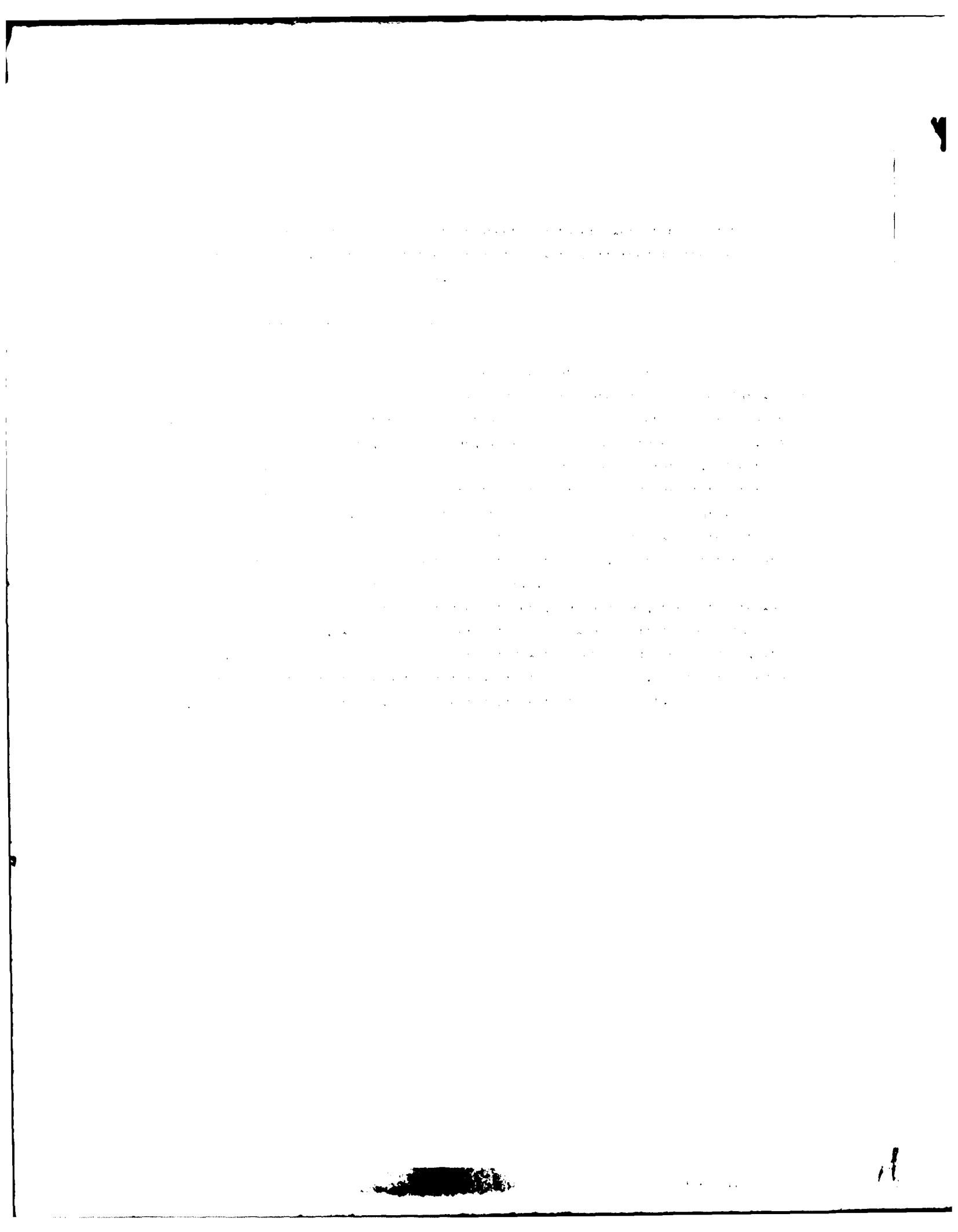
The first test for sugar, which is the most common sugar present, was made by dissolving a portion of the sample in water and adding a few drops of iodine solution. If the sample contained sugar, the iodine would change color from blue to brown. This test was repeated with a different sample, and the results were compared. The iodine test was also used to determine the presence of starch.

The second test for sugar was made by dissolving a portion of the sample in water and adding a few drops of Benedict's reagent. If the sample contained sugar, the Benedict's reagent would change color from blue to red. This test was also used to determine the presence of starch.

TESTS FOR STARCH

The first test for starch was made by dissolving a portion of the sample in water and adding a few drops of iodine solution. If the sample contained starch, the iodine would change color from blue to brown. This test was also used to determine the presence of sugar.

Following the first testing, four test solutions were selected and subjected to a series of three sedimentation tests. Ultimately, two of these four sedimentations were selected for application of the iodine and sugar reagent tests of the control



ANSWER TO Q. 1

Journal of the American Statistical Association, Vol. 33, No. 202, June, 1938.

and the other two were the same as the first, with the exception of one change. The second

PROCEDING PAGE BLANK-NOT FILMED

Calculation of Curative weight

The following equations may be used to calculate the curative addition required:

$$\text{C} = \text{curative level per 100 parts prepolymer}$$

$$\frac{\text{Percent } \text{MgO}_2 \text{ Equivalent Wt.}}{\text{C}} = \frac{\text{Curative } \times \text{Curative Mole Ratio}}{100}$$

$$\text{Curative mole ratio} = \frac{\text{Theoretical Curative level}}{100}$$

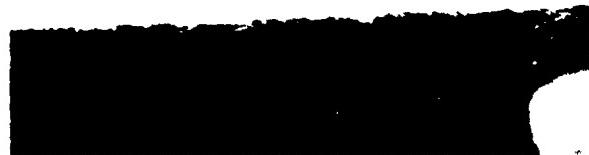
TABLE B-1 - DENSITY OF POLY(ACRYLIC ACID) AND POLY(METHYL METHACRYLATE)

Material	Weight Density lb./cu. in.	Density kg./cu. m.
Acrylic Acid	1.15	1920
Methyl Methacrylate	1.05	1750

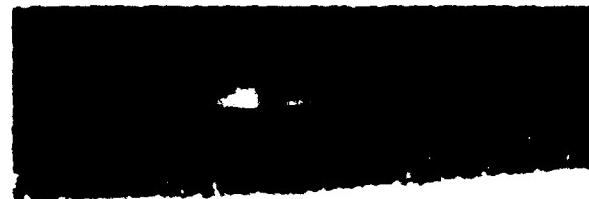
Figure 1. Effect of infiltration rate on infiltration and infiltration of completely and incompletely infiltrated mats.



b) POLYURETHANE
FORMULATION 146
COMPLETELY
INFILTRATED MAT.
5.5 oz/yd²



b) POLYURETHANE
FORMULATION 146
95-100% INFILTRATED MAT
11.8 oz/yd²



c) POLYURETHANE
FORMULATION 146
INFILTRATED MAT (50-60%)
UNINFILTRATED MAT (40-50%)
14.5 oz/yd²

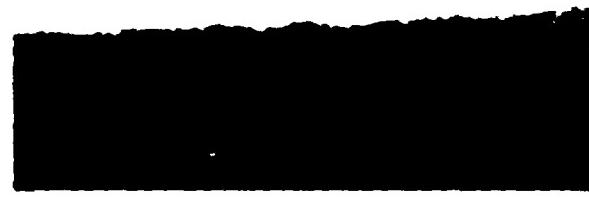


Figure B-1 - Permeation of Formulation 205 Polyurethane Into Polyester Mats
at Weight 5.5, 11.8 and 14.5 Ounces per Square Yard



a) CAST
LIQUID 205
IMPREGNATED
MAT. 5.5 oz/yd²

b) CAST LIQUID
FORMULATION 206
IMPREGNATED MAT.
UNIMPREGNATED MAT. 11.8 oz/yd²

c) CAST LIQUID
FORMULATION 206
IMPREGNATED MAT.
UNIMPREGNATED MAT. 14.5 oz/yd²

The amount of bromophenol blue indicator required to titrate one mole of the sample may be determined by titration of the sample solution with a standard sodium hydroxide solution. The titration is carried out in the same manner as the iodine titration, except that the bromophenol blue indicator is added at the end of the titration. The color change from yellow to blue is used to indicate the completion of the titration.

After the titration is completed, the volume of titrant required to titrate one mole of the sample is determined by subtracting the volume of titrant required to titrate one mole of the sample from the total volume of titrant required to titrate one mole of the sample plus one mole of bromophenol blue indicator. The bromophenol blue indicator is added at the end of the titration to determine the volume of titrant required to titrate one mole of bromophenol blue indicator.

ANALYSIS FOR IODINE

The iodine content is determined as the percent by weight of NaI in the sample. The following procedure may be followed:

After the titration is completed, the sample is rinsed with water and the rinsing water is added to the sample solution. The sample solution is then titrated with a standard iodine solution. The volume of iodine solution required to titrate one mole of the sample is determined by subtracting the volume of iodine solution required to titrate one mole of the sample from the total volume of iodine solution required to titrate one mole of the sample plus one mole of bromophenol blue indicator. The bromophenol blue indicator is added at the end of the titration to determine the volume of iodine solution required to titrate one mole of bromophenol blue indicator.

The iodine content is determined from the following calculation:

$$\text{Percent NaI} = \frac{\text{C}_1 \times V_1 - C_2 \times V_2}{\text{Weight of Sample}} \times 100$$

where C_1 = volume of NaI required for blank (ml)

C_2 = volume of NaI required for sample (ml)

V_1 = volume of NaI solution (ml)

~~Bromophenol Blue Indicator: Dissolve 1 g dry bromophenol blue in 1.5 ml NaOH and dilute to 10 ml with distilled water.~~

PROJECT LOCATION	PROJECT NAME	PROJECT NUMBER	PROJECT TYPE	PROJECT DESCRIPTION		PROJECT STATUS	PROJECT MANAGER
				DESCRIPTION	DETAILS		
1000	Project Alpha	A-1000	Software	System A	Module A	Completed	John Doe
1001	Project Beta	B-1001	Hardware	System B	Module B	In Progress	Jane Smith
1002	Project Gamma	C-1002	Software	System C	Module C	Pending Review	Mike Johnson
1003	Project Delta	D-1003	Hardware	System D	Module D	On Hold	Sarah Lee
1004	Project Epsilon	E-1004	Software	System E	Module E	Completed	David White

Report Date:
Generated by:
Project Manager:

the permeation rate was measured at different temperatures. The results are shown in Figure 3. The permeation rate decreased with increasing temperature. The decrease in permeation rate with increasing temperature is due to the fact that the diffusion coefficient of the penetrant increases with increasing temperature. The diffusion coefficient of the penetrant is proportional to the square root of the temperature. The diffusion coefficient of the penetrant is also proportional to the square root of the pressure. The diffusion coefficient of the penetrant is also proportional to the square root of the density of the penetrant. The diffusion coefficient of the penetrant is also proportional to the square root of the viscosity of the penetrant. The diffusion coefficient of the penetrant is also proportional to the square root of the solubility of the penetrant in the polymer. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the penetrant. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the polymer. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the solvent. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the carrier. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the diluent. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the diluent.

Effect of Temperature on Permeation

The effect of temperature on permeation can be explained by the theory of diffusion. The diffusion coefficient of the penetrant is proportional to the square root of the temperature. The diffusion coefficient of the penetrant is also proportional to the square root of the pressure. The diffusion coefficient of the penetrant is also proportional to the square root of the density of the penetrant. The diffusion coefficient of the penetrant is also proportional to the square root of the viscosity of the penetrant. The diffusion coefficient of the penetrant is also proportional to the square root of the solubility of the penetrant in the polymer. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the penetrant. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the polymer. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the solvent. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the carrier. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the diluent. The diffusion coefficient of the penetrant is also proportional to the square root of the activation energy of the diluent.

Accordingly, permeation is proportional to the diffusion coefficient of the penetrant. The diffusion coefficient of the penetrant is proportional to the square root of the temperature. The diffusion coefficient of the penetrant is proportional to the square root of the pressure. The diffusion coefficient of the penetrant is proportional to the square root of the density of the penetrant. The diffusion coefficient of the penetrant is proportional to the square root of the viscosity of the penetrant. The diffusion coefficient of the penetrant is proportional to the square root of the solubility of the penetrant in the polymer. The diffusion coefficient of the penetrant is proportional to the square root of the activation energy of the penetrant. The diffusion coefficient of the penetrant is proportional to the square root of the activation energy of the polymer. The diffusion coefficient of the penetrant is proportional to the square root of the activation energy of the solvent. The diffusion coefficient of the penetrant is proportional to the square root of the activation energy of the carrier. The diffusion coefficient of the penetrant is proportional to the square root of the activation energy of the diluent. The diffusion coefficient of the penetrant is proportional to the square root of the activation energy of the diluent.

14.0 oz/vd² mat = approximately 1.01 permeation

11.8 oz/vd² mat = approximately 0.91 permeation

9.6 oz/vd² mat = approximately 0.81 permeation

TASK 2 - HOMOGENEOUS MATERIALS DEVELOPMENT

In order to prepare specimens for evaluation in this task, the handling procedures for the polyurethane polymers had to be modified. The addition of 5% carbon black to 5% tanned silica increased the viscosity of the prepolymers to such an extent that the additives could not be added either by simple stirring or in a paint mill.

For formulation PU-208 (OBAT-100 + 5% carbon black + 5% tanned silica), approximately 1% of xylene was added to reduce the viscosity, and a satisfactory dispersion was obtained by milling in a paint mill. This material was then stirred with a high-torque low-speed stirrer under vacuum to remove the solvent. Analysis of the prepolymer indicated a 2.9% isocyanate content (compared to 3.4% normally expected for this material). The lower NCO figure may have been due to reaction of the isocyanate group with atmospheric moisture, since a large surface area of the prepolymer is exposed during milling. The correct calculated quantity of curative was subsequently calculated for the prepolymer and the material was successfully cast into a 1- cm^3 cube.

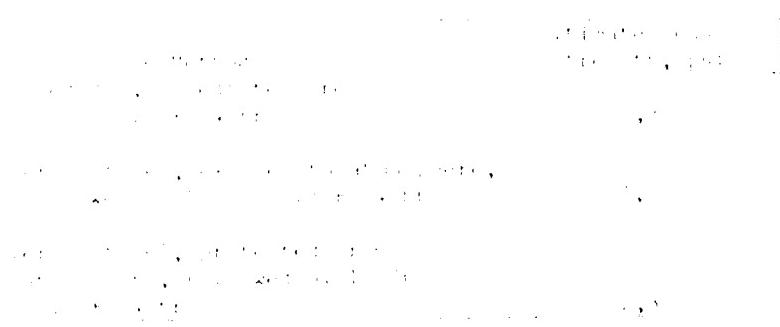
For PU-211 (OBAT-100 + 5% carbon black) a slightly different approach was adopted for the modification procedure. The modification was to incorporate the 5% carbon black into the polyurethane prepolymer and, separately, blend the 5% tanned silica into the butane diol chain extender. The two modified components were then to be mixed in a "Knecht" cartridge dispenser, and extruded followed by molding in the form of 1/16" sheets.

The carbon black was successfully incorporated into the prepolymer. However, blending of the silica into the butane diol was found to be impossible, since only about 10 percent silica is necessary to satisfy the stoichiometric requirements of the prepolymer. (For a prepolymer of 3% NCO content, this would amount to about 5 g of silica (10% per 100 g of prepolymer). Consequently, a compromise was made, and the material was cast containing the carbon black only.

For PU-211 (OBAT-198 + 5% carbon black and 5% silica), the addition of approximately 1% xylene was necessary, and curing of the polymer was considerably retarded by the presence of the solvent, even though this system was catalyzed with T-12 catalyst. (The post-cure of this material was delayed until most of the solvent had diffused out; otherwise voids would have been formed by the solvent vapor.)

the polymerization reaction. It is also important to note that the polymerization reaction is exothermic and that the heat evolved during the polymerization reaction can cause the temperature of the polymerization reaction mixture to rise. This rise in temperature can lead to a decrease in the rate of polymerization and can also lead to a decrease in the yield of the polymer.

Effect of Temperature on the Polymerization Reaction



The graph shows that the rate of polymerization increases with increasing temperature up to a certain point and then begins to decrease. This indicates that the polymerization reaction is exothermic and that the heat evolved during the polymerization reaction can cause the temperature of the polymerization reaction mixture to rise. This rise in temperature can lead to a decrease in the rate of polymerization and can also lead to a decrease in the yield of the polymer.

The following potential of these formulations can be obtained only when the material is heated rapidly immediately upon use.

the effect of the polymerization conditions on the formation of the polymer was investigated. This was done by varying the additional systems and their quantities. This was an attempt to find the optimum polymerization conditions for the formation of PPMs of $M_w = 10^6$. The results of the experiments on PPMs are given in Table I. Other parameters such as M_w/M_n , the viscosity, and the molecular weight distribution were also determined. The properties of these investigation will be discussed in the following sections. It is evident from the results that the lower molecular weight polymers have a higher viscosity and a lower molecular weight.

the effect of the different variables on the performance of the evaluated test items, determining the most effective variable for each item, and identifying test items that are

• [View the related news stories](#)

As a result of the relative constancy of the initial sedimentary material, it was decided to repeat the experiments with similar samples.

The results obtained by the earlier author in similar experiments were as follows:—
The first series of experiments on the earlier patient were conducted in the following manner:—On the day before the operation, the head of the patient was shaved three times to remove the hair and constant pressure was applied to the patient's head. The patient was then treated with a special ointment containing mercury and allowed to dry.

In the first instance, the table was covered with the liquid elastomer and the entire assembly was heated. This was with the BAX demonstrated that, as previously indicated, the elastomer will be applied to the surface of the table at the intersections of the other-table intersections, despite the different orientation of the board number. After adding the partially solid elastomer, it was flattened over and coated on the opposite side.

After the first two wheels were post-scored at 100°C (212°F) for 1 hr., they were prepared for testing at BAE, and for delivery to the Center for evaluation. In addition to the coated-tire specimens, 1/8-in.² sheets of the uncoated rubber were also prepared for delivery to the center.

In the case of polyisobutylene formulation 2₀, a difference in processing was necessary in the fabrication of large size (1- yd^2) sheets of the fabric-reinforced material which were required. Whereas the properties of the original formulation were derived from test sheets prepared by heat-curing of the liquid elastomer to solidifies immediately after casting, the polymers applied to the 1- yd^2 sheets of fabric were allowed to gel overnight to facilitate handling; they were then oven-cured at 115°C (217°F) for 3 hr.

the first time, the author has been able to illustrate the presence of a large number of species in the same sample. The following list includes all the species found in the samples examined, and the numbers indicate the number of individuals present in each sample. The list is arranged in the following order: 1) the most abundant species; 2) the species which were found in the greatest number of samples; 3) the species which were found in the greatest number of individuals per sample. The following list includes all the species found in the samples examined, and the numbers indicate the number of individuals present in each sample. The list is arranged in the following order: 1) the most abundant species; 2) the species which were found in the greatest number of samples; 3) the species which were found in the greatest number of individuals per sample. The following list includes all the species found in the samples examined, and the numbers indicate the number of individuals present in each sample. The list is arranged in the following order: 1) the most abundant species; 2) the species which were found in the greatest number of samples; 3) the species which were found in the greatest number of individuals per sample.

In addition to the elastomers BAF-146y and BAF-146z, another further elastomer was synthesized by substitution of A-186 valency; this was a supplementary formulation, being referred to as being under "Miscellaneous Supplementary Works." The elastomer was analogous to formulation BAF-146, but featured the use of a PPEE_x of m.w. 29,000 substituted for PPEE_x of m.w. 30,000. The NCO/OH ratio and curative level were unchanged. This structure-modified elastomer was designated 201.

It is generally difficult to prepolymerize, when treated with MMA as a comonomer, reacted at 50°C for 10 hours, and then polymerized at 60°C for 10 hours, the polyisobutylene polymer of low viscosity. The short reaction times automatically eliminate these factors from further consideration.

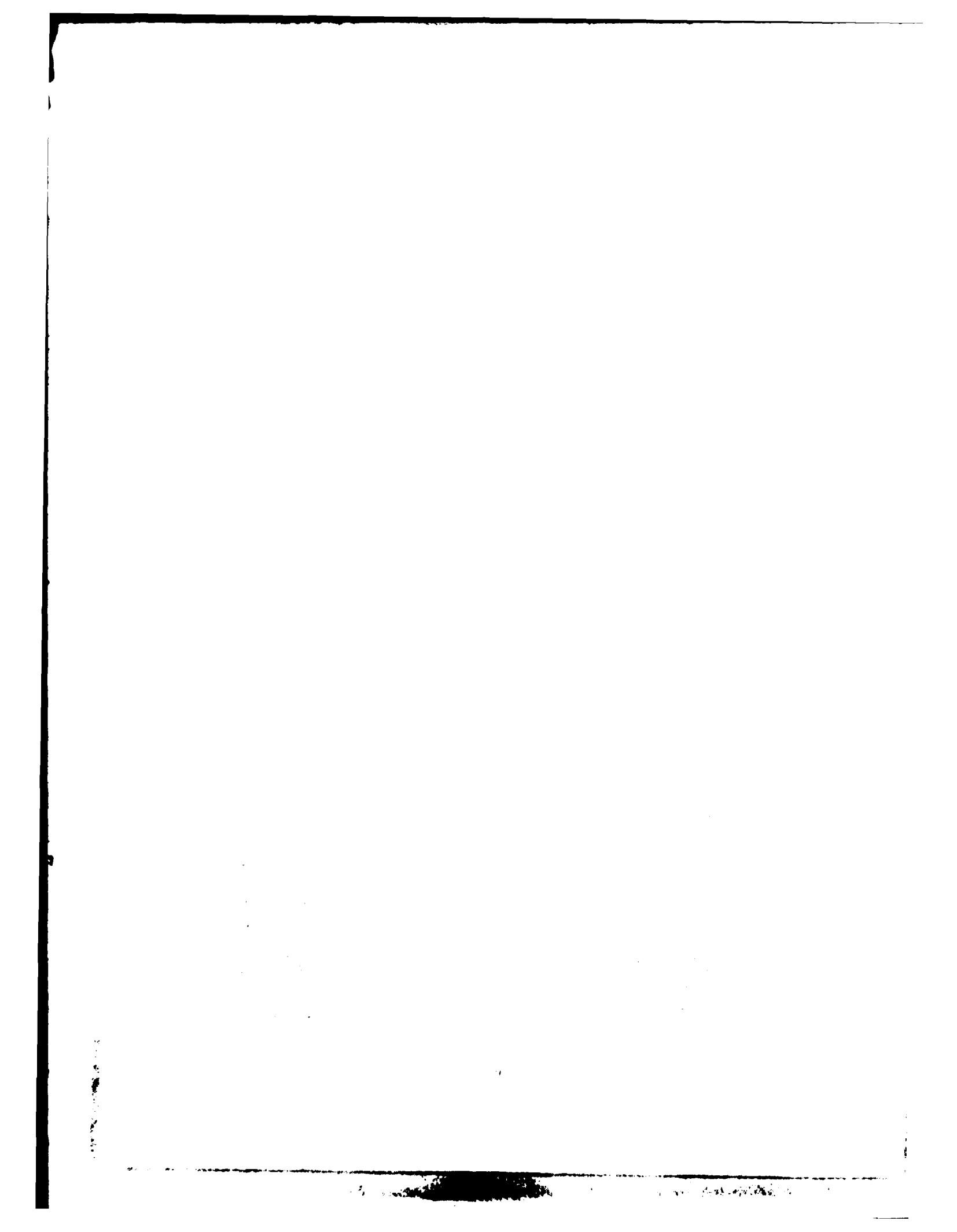
In some of the polymerizations, when treated with $\text{BF}_3\text{-OEt}_2$, no initiating reagent was added, it was necessary to catalyze the reaction with a TiCl_4 -initiator. These different types of experiments and were then post-examined at the same time. The results were collected at low-modulus elastometers, 180° and 0°, and 100° or 120°, and are shown in Appendix C.

For wing-blade growth personnel at the center, it was intended to further evaluate the use of the electron beam as a sterilizing agent and two similar units, based on 150 kV, were constructed. The first unit was used to screen food with a potential field of 100 kV/cm. In spite of initial successes and after prolonged heating during the electron beam cycle, the prepolymerized samples of starch after irradiation with 100 kV yielded only tarry products; those from the tubular reactor with nitrogen purging, and left to an additional four days, were found to be sterilized. The prepolymerized starch had a ratio of 3:1 according to the following experimental plan:

CS 15			
IPDI	H12MDI	IPDI	H12MDI
1- <i>et.</i> , 1;3* Isomol	2- <i>et.</i> , 1;3* Isomol		
199	200	197	198
*2-ethyl 1;3 hexane diol			

¹ See also the discussion of the relationship between the two concepts in the section on "The Concept of Social Capital."

Such a procedure is often used in patients who have had extensive phototherapy, and it may be particularly useful in those with a history of severe side effects from the two-sensitiser technique. It will reduce the risk of relapse, because the patient will have had only one sensitiser, and it may also help to alleviate their psychopathology. Such a treatment programme can be initiated with the co-operation of a psychiatrist. About 10% of patients have shown improvement in their depression following such a course.



the first time in history that the country had been involved in the execution of its own people.

The second reason was that the country had been involved in the execution of its own people.

The third reason was that the country had been involved in the execution of its own people.

The fourth reason was that the country had been involved in the execution of its own people.

The fifth reason was that the country had been involved in the execution of its own people.

It is clear from the above that the country had been involved in the execution of its own people.

Reason	Country
1. The country had been involved in the execution of its own people.	America
2. The country had been involved in the execution of its own people.	America
3. The country had been involved in the execution of its own people.	America
4. The country had been involved in the execution of its own people.	America
5. The country had been involved in the execution of its own people.	America

TABLE II.—THE LAW OF CAPTURE RELATIONSHIP FOR THE
SUSPENDED DUST AND AEROSOL.

THE INFLUENCE OF THE CULTURE OF THE CLOTHES ON THE CLOTHING BEHAVIOR OF WOMEN

Standard Test Method	Test Method
ASTM D 104	ASTM D 104
ASTM D 104	ASTM D 104

TABLE I - SUMMARY OF EVALUATION OF VARIOUS
RUBBER-COATED LEATHERS

Properties to be Measured	Standard Test Method
Tensile Strength	ASTM D-2247, D-2248
Impact Strength	Impact Test, ASTM D-1704*
Water Absorption	ASTM D-2857, D-2858
Hygroscopic Change	Hygroscopic, ASTM D-1704
Effect of Water on Strength Flexible Fatigue	Impact, ASTM D-1704
Water Absorption	Weight gain

* An intense vertical load on a flexible bending strip is applied to the rubber.

APPENDIX D

DETAILED EXPERIMENTAL DATA

This appendix presents more detailed experimental data from which the averaged results were calculated and presented in the text. In most cases, the results for each test specimen are tabulated; in a few cases where the numerical spread in data was small, the maximum and minimum values are tabulated in addition to the average value, rather than each individual data point. Usually 3 to 5 data points were tabulated for each average value.

In Tables D.1 and D.2 are presented the crack growth and flexural fatigue data for the 7 mm rubber polymers and the 1.6 castable liquid polyurethane polymer, respectively. Results are presented for each of the three specimens which were evaluated at each geometry and the generally large spread in results of this type of test is obvious.

Tables D.3 and D.4 contain the mechanical characterization data for the 7 mm rubber polymers and the 1.6 castable liquid polyurethane polymers which were selected for this phase of the program. Table D.5 presents the coating adhesion data. Tables D.6 and D.7 contain the Pico-abrasion test results for the 7 mm rubber polymers and the 1.6 castable liquid polyurethane polymers. Experimental results from the duplicate specimens which were evaluated with the double-texmeter hysteresis test are listed in Tables D.8 and D.9 for the 7 mm rubbers and polymer thines, respectively. Plots of the temperature rise versus time for the various polymers are presented in Figures D.1, D.2, D.3, D.4, D.5, D.6, and D.7 for the 7 mm polymers and in Figures D.8, D.9, and D.10 for the polyurethane polymers.

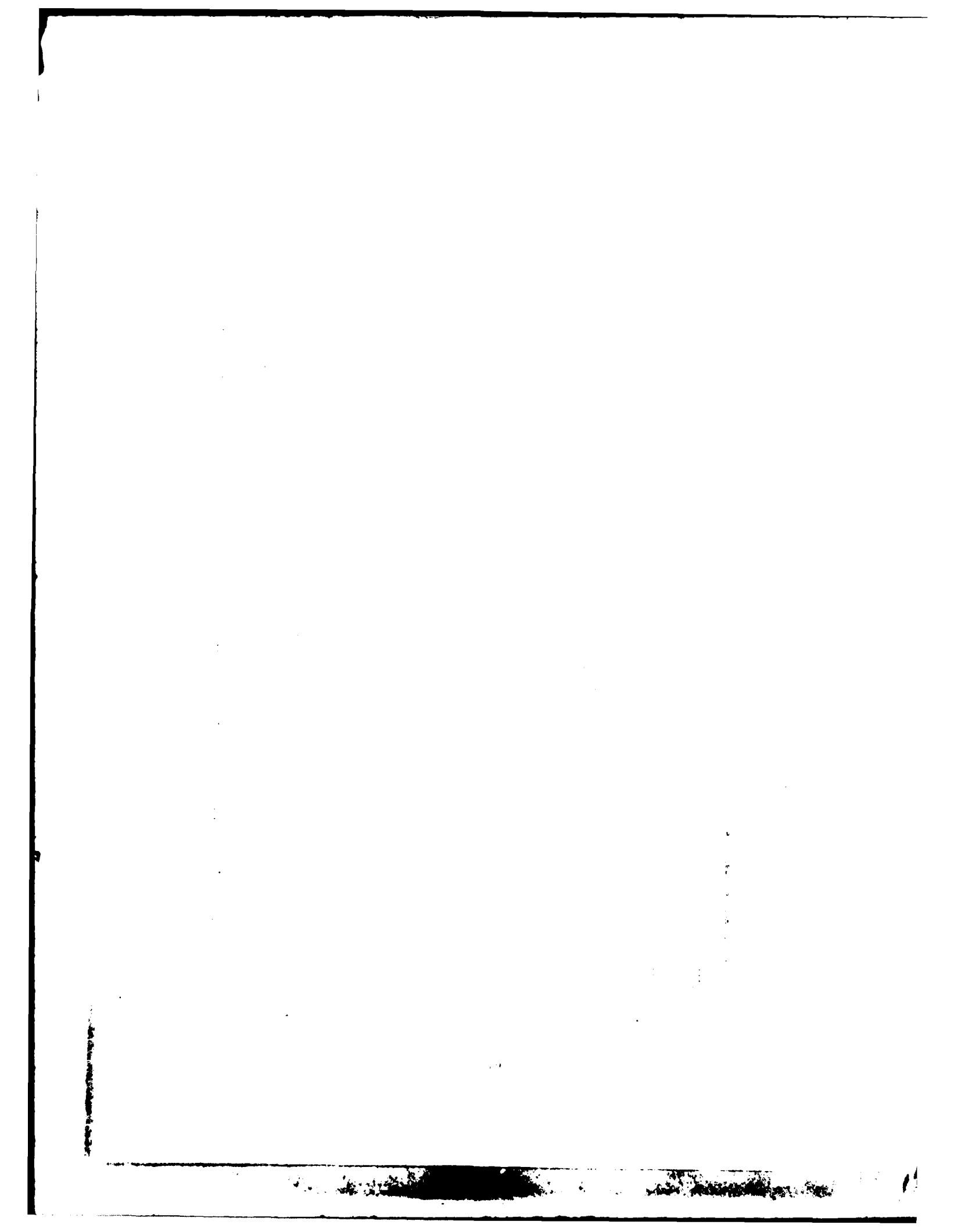
More details of the experimental data characterizing the effects of water on the polymers are presented in Tables D.11 and D.12. Similarly, the effects of temperature are presented in Tables D.13 and D.14.

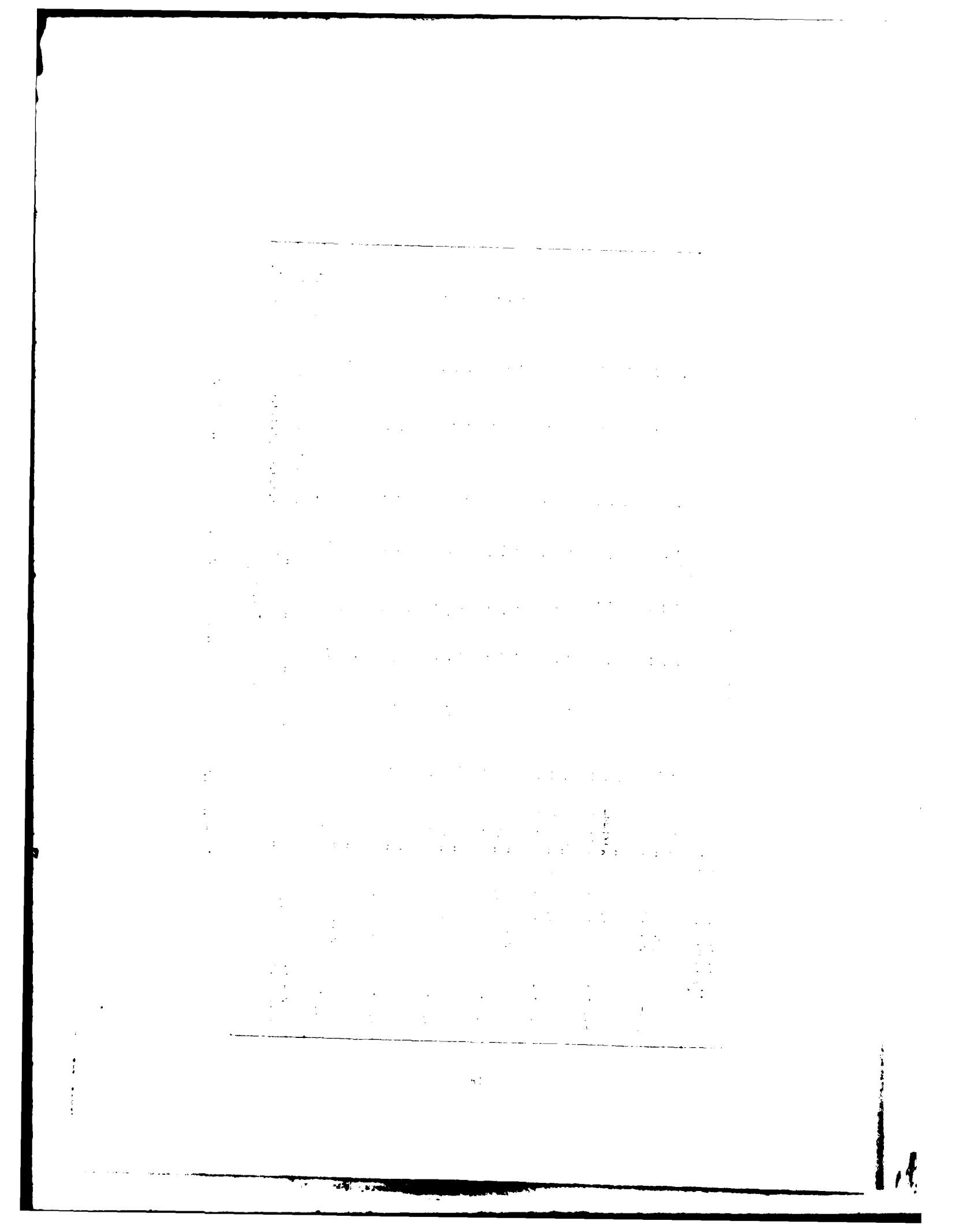
Tensile and elongation data for each specimen at three different test temperatures are presented in Table D.15 for the 7 mm rubber polymer coated nylon fabric, polyester, and for the castable polyurethane polymer coated nylon fabric, polyester in Table D.16. Similarly, tear strength results are presented in Tables D.16 and D.17. Coating adhesion results are presented in Table D.18 for polyurethane coated nylon fabric; the fabric and adhesion promoter were the same as used in the previous coating adhesion tests.

resistant to the trifluoroethylene specimens of polymer-coated nylon fabric. Limitates were calculated for the overall fatigue resistance in the bimorphic test are indicated from Tables III, IV and V.

Table X gives some of the statistical results of the presented work function of each of the specimens of Table III and IV.

The results of the coated and uncoated polytetrafluoroethylene composite specimens are presented in Tables VI, VII, VIII, the strength, the tear strength, and the coating adhesion.





THE INFLUENCE OF THE CULTURE OF THE PUPILS ON THE PUPILS

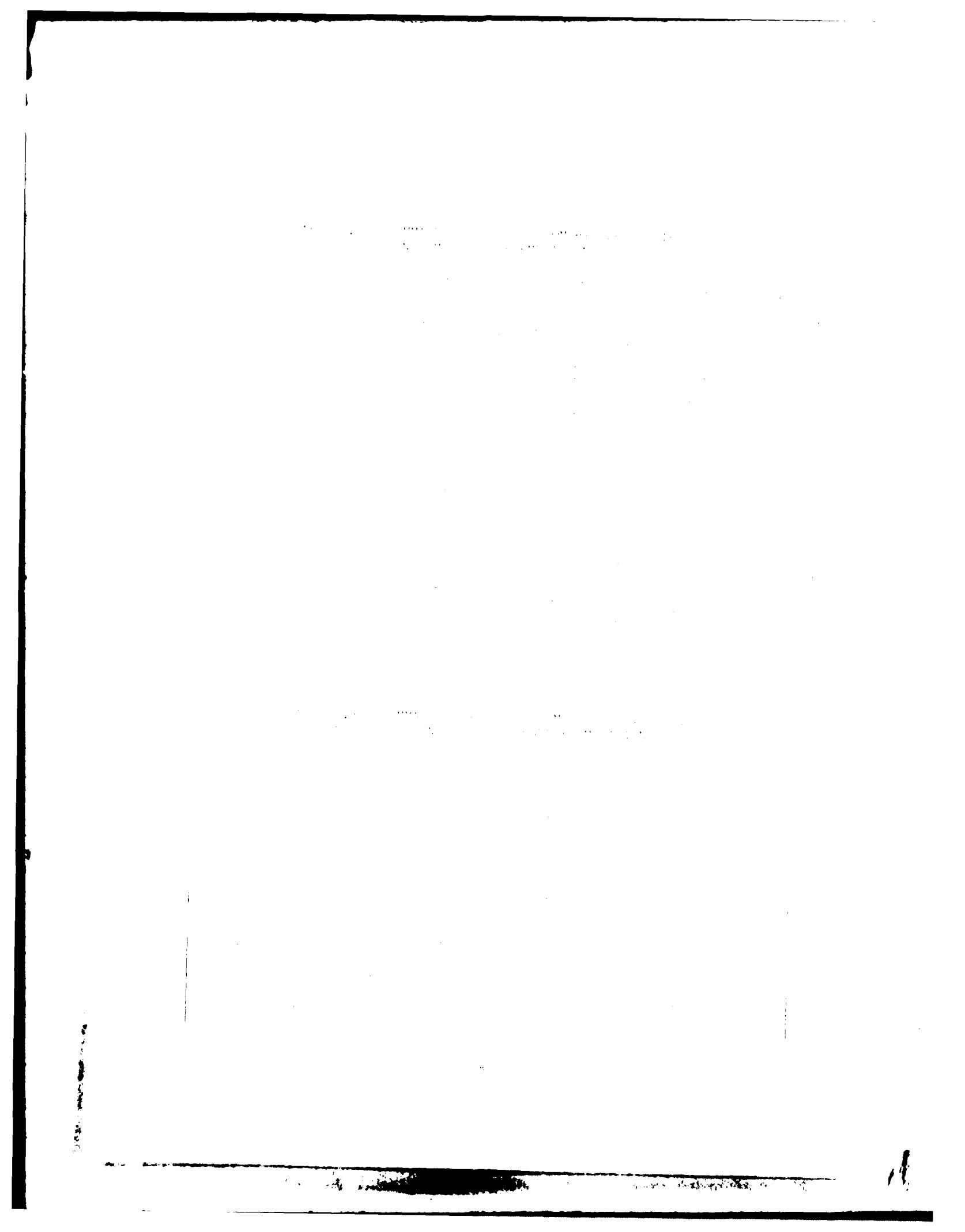
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

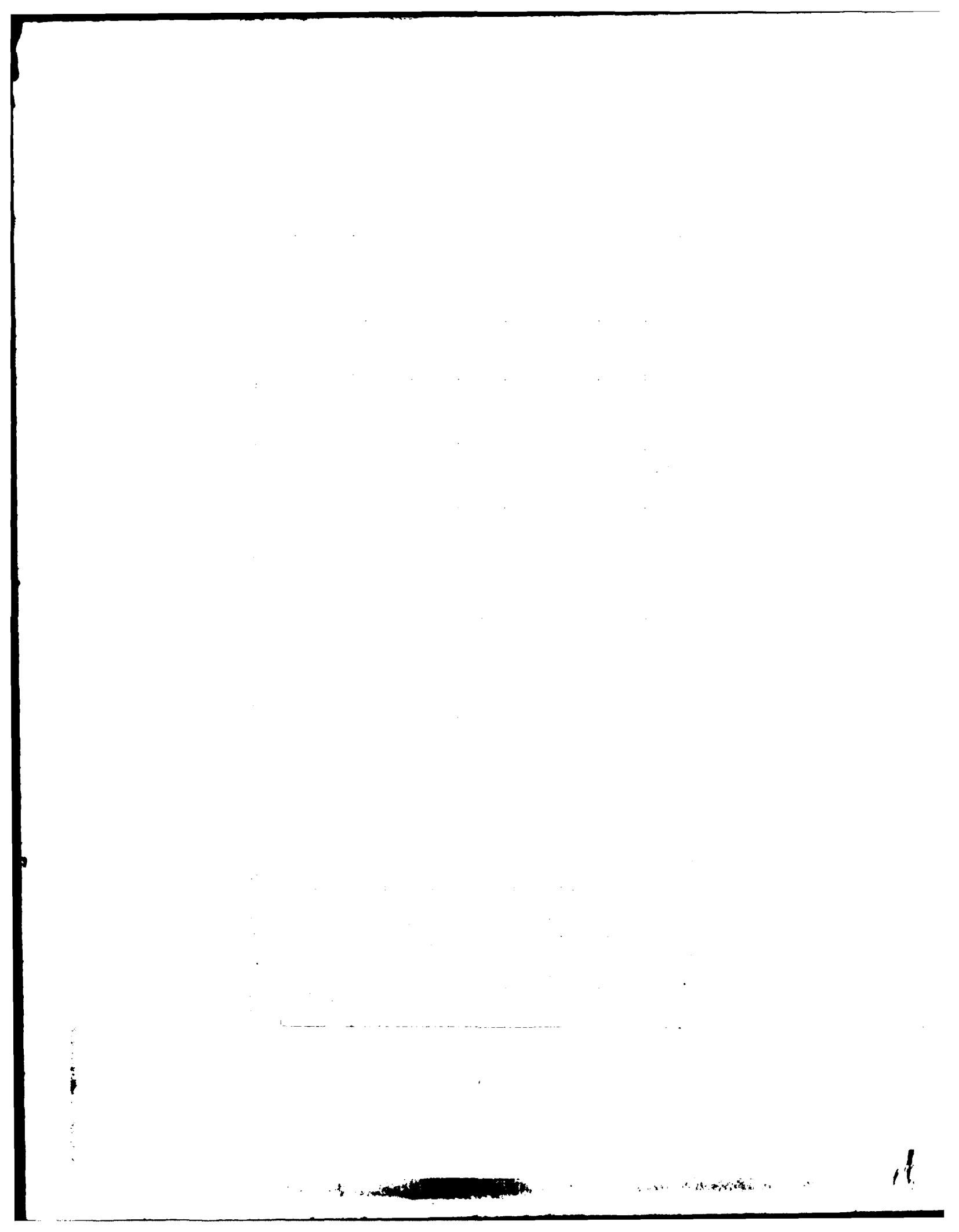
總計，一九五一年以來，全國共完成土改面積六千八百萬公頃。

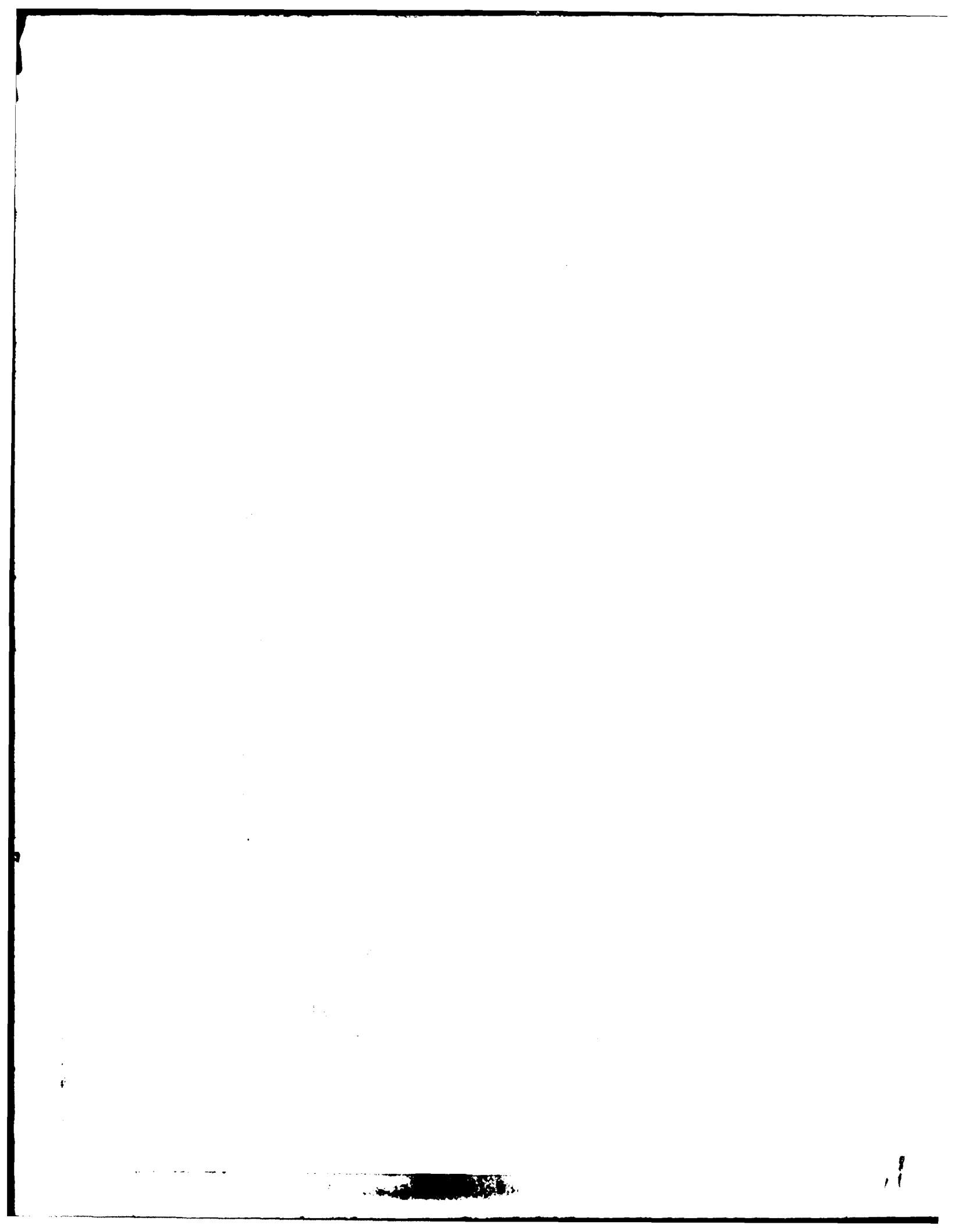
19. The following table shows the number of hours worked by each of the 1000 workers in the firm.

For more information about the study, please contact Dr. Michael J. Koenig at (314) 747-2000 or via e-mail at koenig@dfci.harvard.edu.

Students' responses to the survey were analyzed using SPSS statistical software.







AD A151 438 FINGER MATERIALS FOR AIR CUSHION VEHICLES VOLUME 1
FLEXIBLE COATINGS FOR... (U) BELL AEROSPACE TEXTRON
BUFFALO NY P K CONN ET AL. DEC 84 7467-92704B-VOL-1
UNCLASSIFIED DTNSRDC-85/003 N00600-78-C-0250

2/2

F/G 11/3

NL

END
100
A 8

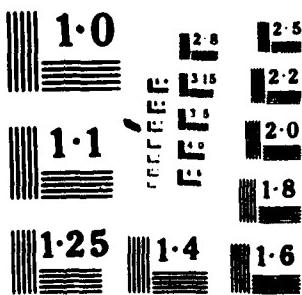


TABLE D.13 - MECHANICAL PROPERTIES OF POLY(STEREOMETHACRYLATE) BEFORE AND AFTER IRRADIATION IN H_2O AT 30°C

Formulation No.	Mechanical Properties Before Irradiation		Mechanical Properties After Irradiation	
	Tensile Strength kg/cm ²	Elongation at Break %	Tensile Strength kg/cm ²	Elongation at Break %
183 PBO- PMMA	10.6	100	10.6	100
184 PBO-Styrene Co-polymer	10.6	100	10.6	100
185 PBO-Styrene Co-polymer	10.6	100	10.6	100
186 PBO-Styrene Co-polymer	10.6	100	10.6	100
187 PBO-PPO (2000 MW) Co-polymer	10.6	100	10.6	100

* Irradiated at 1 Mrad/hr for 10 minutes.

TABLE D.16 - TENSILE RESULTS FROM RUBBER/WOVEN NYLON COMPOSITES

1.	-1	0.300	11.00	38
2.	-1	0.300	1060	31
3.	-1	0.300	1160	
4.	-1	0.300	1193	31
5.	-1	0.300	1133	30

TABLE D.14 - (Continued)

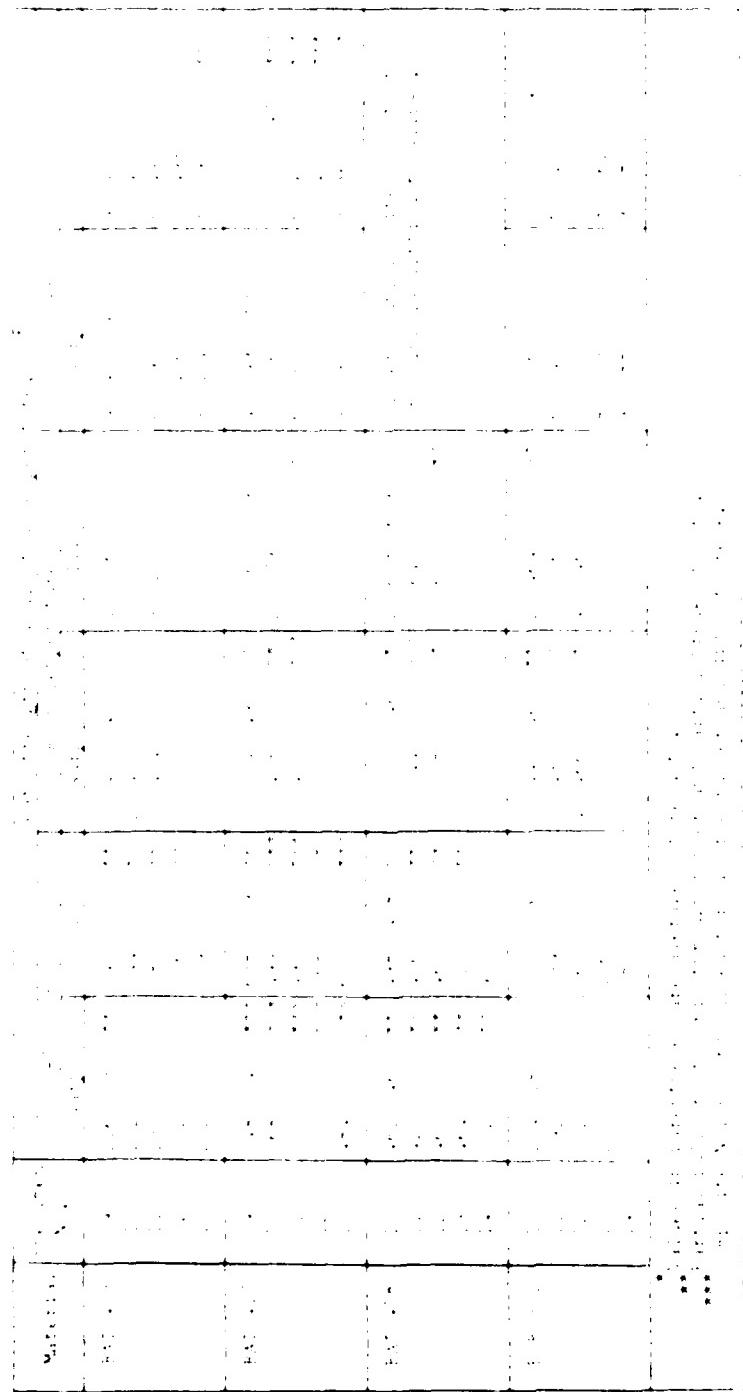
Material	Test	Tensile Strength lbs/in. ²	Elongation %	Average
1411	100°C	1020	33	36
	100°C	1086	23	
	100°C	993	25	
	100°C	1052	31	
	100°C	1012	30	
1412	100°C	1043	25	29
	100°C	1112	40	
	100°C	1091	30	
	100°C	1063	28	
	100°C	1086	31	
1413	100°C	1180	22	23
	100°C	1086	24	
	100°C	1141	23	
	100°C	1160	22	
	100°C	1147	20	
1414	100°C	1043	30	30
	100°C	974	31	
	100°C	981	28	
	100°C	1006	28	
	100°C	1043	28	
1415	100°C	1020	60	61
	100°C	1049	38	
	100°C	1086	44	
	100°C	1092	38	
	100°C	1010	37	
1416	100°C	1046	23	23
	100°C	974	31	
	100°C	981	28	
	100°C	1002	28	
	100°C	1010	31	
1417	100°C	1046	23	23
	100°C	974	31	
	100°C	981	28	
	100°C	1002	28	
	100°C	1010	31	
1418	100°C	1046	23	23
	100°C	974	31	
	100°C	981	28	
	100°C	1002	28	
	100°C	1010	31	
1419	100°C	1020	14	14
	100°C	1086	19	
	100°C	982	1	
	100°C	1043	13	
	100°C	1063	20	
1420	100°C	1093	18	18
	100°C	1006	26	
	100°C	1020	16	
	100°C	1099	30	
	100°C	1046	30	

TABLE D.15 - (Continued)

Material	Specimen No.	Weave Direction	Test Temperature °C (°F)	Tensile Strength lbs./in. ²	Average Elongation	Avg. range
	11		-1 (-30)	1192	15	15
	12		-1 (-30)	1152	—	—
	13		-1 (-30)	1184	20	20
	14		-1 (-30)	974	32	32
	15		-1 (-30)	1241	14	14
<hr/>						
BAJ 418	1	Warp	-24 (-11°F)	1177	49	49
	2		-24 (-11°F)	1176	49	49
	3		-24 (-11°F)	1174	49	49
	4		-24 (-11°F)	1181	56	56
	5		-24 (-11°F)	1181	49	49
<hr/>						
	6		-9 (-12°F)	—	—	—
	7		-9 (-12°F)	—	—	—
	8		-9 (-12°F)	Testing cancelled, material softened.	—	—
	9		-9 (-12°F)	—	—	—
	10		-9 (-12°F)	—	—	—
<hr/>						
	11		-1 (-30)	—	—	—
	12		-1 (-30)	—	—	—
	13		-1 (-30)	Testing cancelled.	—	—
	14		-1 (-30)	—	—	—
	15		-1 (-30)	—	—	—
<hr/>						
	1	F111	-24 (-11°F)	1148	49	49
	2		-24 (-11°F)	1129	60	60
	3		-24 (-11°F)	1125	30	30
	4		-24 (-11°F)	1120	29	29
	5		-24 (-11°F)	1016	29	29
<hr/>						
	6		-9 (-12°F)	1152	1176	25
					Rubber covering gave-way first pull, spec. repositioned and test completed.	28
	7		-9 (-12°F)	1289	—	42
					Test temperature > 11°F; first test at 12°F; rubber gave-way.	—
	8		-9 (-12°F)	Testing cancelled, rubber covering softened and was separated from fabric by grip.	—	—
	9		-9 (-12°F)	1089	26	26
	10		-9 (-12°F)	—	Test Temperature > 110°F.	—
<hr/>						
	11		-1 (-30)	Testing cancelled.	—	—
	12		-1 (-30)	—	—	—
	13		—	—	—	—
	14		—	—	—	—
	15		—	—	—	—

TABLE I
TENSILE RESULTS FROM FLAME-WOVEN
NYLON COMPOUND

Material	Test No.	Weave Direction	Temperature in °F.	Test		Material Absorb.	Tensile Strength lb/in. ²	Elongation at break
				Load in lb.	Strain in %			
Nylon 6 Fibre	1	Warp	74 (75)	0.171	1040	45		
	2	Warp	74 (75)	0.184	1100	43		
	3	Warp	74 (75)	0.170	1160	30		
						Avg.,	1100	Avg., 37
	4	Warp	74 (75)	0.172	1150	40		
	5	Warp	74 (75)	0.198	1030	60		
	6	Warp	74 (75)	0.195	1100	38		
	7	Warp	74 (75)	0.197	1040	37		
						Avg.,	1080	Avg., 37
183 + Nylon Fabric	1	F111	74 (75)	0.184	830	70		
	2	F111	74 (75)	0.186	1180	25		
	3	F111	74 (75)	0.185	1170	30		
	4	F111	74 (75)	0.191	1290	20		
						Avg.,	1120	Avg., 25
	5	F111	74 (75)	0.168	1120	30		
	6	F111	74 (75)	0.172	970	3		
	7	F111	74 (75)	0.186	1170	28		
	8	F111	74 (75)	0.187	1090	22		
						Avg.,	1070	Avg., 24
183 + Nylon Fibre	1	Warp	74 (75)	0.149	1140	3		
	2	Warp	74 (75)	0.149	1180	30		
	3	Warp	74 (75)	0.139	1060	30		
	4	Warp	74 (75)	0.149	1240	38		
						Avg.,	1170	Avg., 3
	5	Warp	74 (75)	0.140	1060	31		
	6	Warp	74 (75)	0.144	1040	30		
	7	Warp	74 (75)	0.146	1100	3		
	8	Warp	74 (75)	0.146	1080	31		
						Avg.,	1080	Avg., 3
183 + Nylon Fabric	1	F111	74 (75)	0.141	1140	25		
	2	F111	74 (75)	0.140	1100	27		
	3	F111	74 (75)	0.169	1170	26		
	4	F111	74 (75)	0.170	1220	25		
						Avg.,	1160	Avg., 25
	5	F111	49 (120)	0.151	950	21		
	6	F111	49 (120)	0.150	870	23		
	7	F111	49 (120)	0.152	970	28		
	8	F111	49 (120)	0.150	1030	22		
						Avg.,	960	Avg., 25



THE BOSTONIAN SOCIETY HAS BEEN PREPARED FOR THE USE OF THE LIBRARY.

Material	Percent Alkalinity	Percent Acidity	Percent Sulfate	Percent Chloride
Water sample	1.0	0.0	0.0	0.0
Water sample + 10% NaOH	0.0	0.0	0.0	0.0
Water sample + 10% HCl	0.0	0.0	0.0	0.0

TABLE II
Effect of Temperature on Strength Properties

Material Description	Test Temperature (°C - °F)	Strength Properties	Number of Specimens
EBC 302 Nylon - Warp	100 - 212 (212°)	Strength properties were excellent at all temperatures.	100% of specimens
	120 - 248 (248°)	Strength properties were excellent at all temperatures.	100% of specimens
	140 - 284 (284°)	Strength properties were excellent at all temperatures.	100% of specimens
	160 - 320 (320°)	Strength properties were excellent at all temperatures.	100% of specimens
BAC 300 Nylon - Warp	100 - 212 (212°)	Strength properties were excellent at all temperatures.	100% of specimens
	120 - 248 (248°)	Strength properties were excellent at all temperatures.	100% of specimens
	140 - 284 (284°)	Strength properties were excellent at all temperatures.	100% of specimens
	160 - 320 (320°)	Strength properties were excellent at all temperatures.	100% of specimens
BAC 401 Nylon - Warp	100 - 212 (212°)	Strength properties were excellent at all temperatures.	100% of specimens
	120 - 248 (248°)	Strength properties were excellent at all temperatures.	100% of specimens
	140 - 284 (284°)	Strength properties were excellent at all temperatures.	100% of specimens
	160 - 320 (320°)	Strength properties were excellent at all temperatures.	100% of specimens
BAC 402 Nylon - Warp	100 - 212 (212°)	Strength properties were excellent at all temperatures.	100% of specimens
	120 - 248 (248°)	Strength properties were excellent at all temperatures.	100% of specimens
	140 - 284 (284°)	Strength properties were excellent at all temperatures.	100% of specimens
	160 - 320 (320°)	Strength properties were excellent at all temperatures.	100% of specimens

* The static strength of the fibers in the fiber glass was determined by the test specimen exhibited the same or more than 10% elongation.

** The static strength of the fibers in the fiber glass was determined by the test specimen exhibited less than 10% elongation.

THE UNIVERSITY OF TORONTO LIBRARIES
UNIVERSITY OF TORONTO LIBRARY

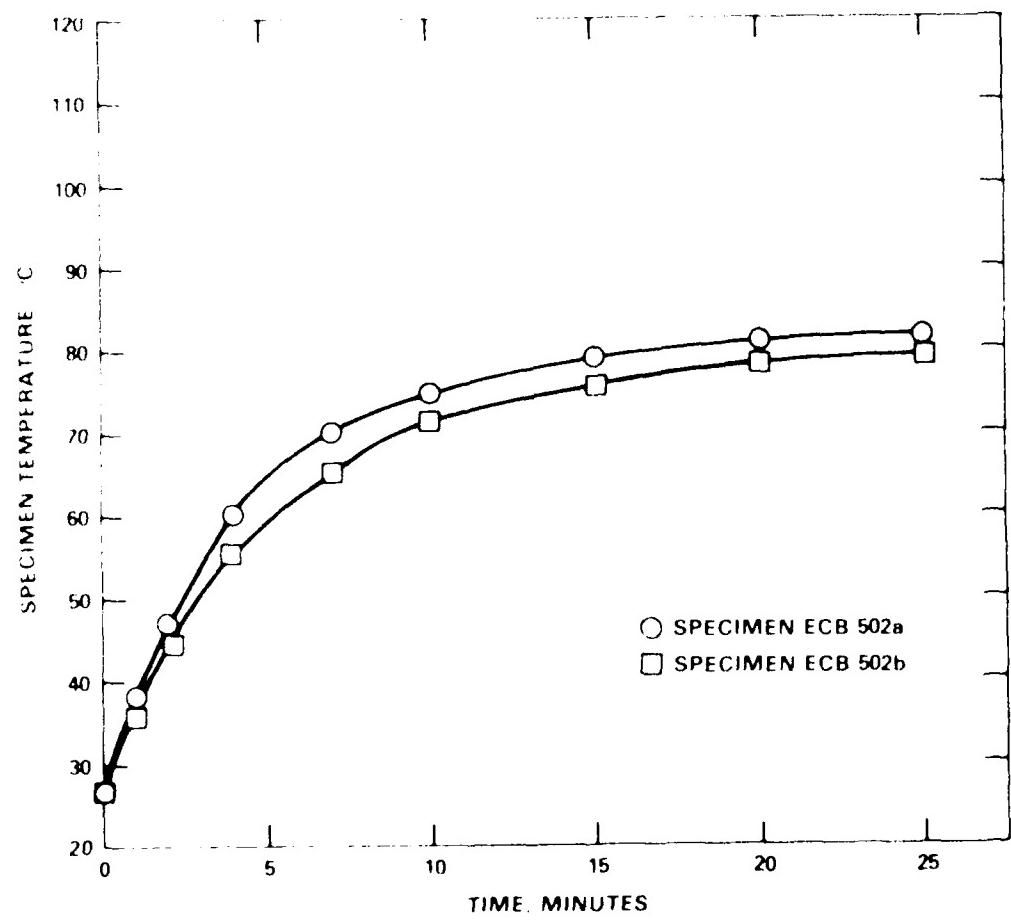
在這裏，我們將會看到一個簡單的範例，說明如何在一個應用程式中使用 `File` 類別。

TABLE I
THERMAL PROPERTIES OF POLY(1,4-BUTYL-1,4-PHENYLENE-POLY(1,4-PHENYLENE))

Material	Intrinsic viscosity (dL/g) ^a	Temperature (°C.)		Heat of fusion (cal/g) ^b
		Crystallization	Melting	
Polymer A	0.15	150	200	1.8
Polymer B	0.15	150	200	1.8
Polymer C	0.15	150	200	1.8
Polymer D	0.15	150	200	1.8
Polymer E	0.15	150	200	1.8
Polymer F	0.15	150	200	1.8
Polymer G	0.15	150	200	1.8
Polymer H	0.15	150	200	1.8
Polymer I	0.15	150	200	1.8
Polymer J	0.15	150	200	1.8
Polymer K	0.15	150	200	1.8
Polymer L	0.15	150	200	1.8
Polymer M	0.15	150	200	1.8
Polymer N	0.15	150	200	1.8
Polymer O	0.15	150	200	1.8
Polymer P	0.15	150	200	1.8
Polymer Q	0.15	150	200	1.8
Polymer R	0.15	150	200	1.8
Polymer S	0.15	150	200	1.8
Polymer T	0.15	150	200	1.8
Polymer U	0.15	150	200	1.8
Polymer V	0.15	150	200	1.8
Polymer W	0.15	150	200	1.8
Polymer X	0.15	150	200	1.8
Polymer Y	0.15	150	200	1.8
Polymer Z	0.15	150	200	1.8
Polymer AA	0.15	150	200	1.8
Polymer BB	0.15	150	200	1.8
Polymer CC	0.15	150	200	1.8
Polymer DD	0.15	150	200	1.8
Polymer EE	0.15	150	200	1.8
Polymer FF	0.15	150	200	1.8
Polymer GG	0.15	150	200	1.8
Polymer HH	0.15	150	200	1.8
Polymer II	0.15	150	200	1.8
Polymer JJ	0.15	150	200	1.8
Polymer KK	0.15	150	200	1.8
Polymer LL	0.15	150	200	1.8
Polymer MM	0.15	150	200	1.8
Polymer NN	0.15	150	200	1.8
Polymer OO	0.15	150	200	1.8
Polymer PP	0.15	150	200	1.8
Polymer QQ	0.15	150	200	1.8
Polymer RR	0.15	150	200	1.8
Polymer SS	0.15	150	200	1.8
Polymer TT	0.15	150	200	1.8
Polymer YY	0.15	150	200	1.8
Polymer ZZ	0.15	150	200	1.8
Polymer AAA	0.15	150	200	1.8
Polymer BBB	0.15	150	200	1.8
Polymer CCC	0.15	150	200	1.8
Polymer DDD	0.15	150	200	1.8
Polymer EEE	0.15	150	200	1.8
Polymer FFF	0.15	150	200	1.8
Polymer GGG	0.15	150	200	1.8
Polymer HHH	0.15	150	200	1.8
Polymer III	0.15	150	200	1.8
Polymer JJJ	0.15	150	200	1.8
Polymer KK	0.15	150	200	1.8
Polymer LL	0.15	150	200	1.8
Polymer MM	0.15	150	200	1.8
Polymer NN	0.15	150	200	1.8
Polymer OO	0.15	150	200	1.8
Polymer PP	0.15	150	200	1.8
Polymer QQ	0.15	150	200	1.8
Polymer RR	0.15	150	200	1.8
Polymer SS	0.15	150	200	1.8
Polymer TT	0.15	150	200	1.8
Polymer YY	0.15	150	200	1.8
Polymer ZZ	0.15	150	200	1.8

TABLE II
THERMAL PROPERTIES OF POLY(1,4-BUTYL-1,4-PHENYLENE-POLY(1,4-PHENYLENE))
IN THE RANGE 150°C. < T < 200°C.

Material	Temperature (°C.)		Heat of fusion (cal/g) ^b
	Crystallization	Melting	
Polymer A	150	180	1.8
Polymer B	150	180	1.8
Polymer C	150	180	1.8
Polymer D	150	180	1.8
Polymer E	150	180	1.8
Polymer F	150	180	1.8
Polymer G	150	180	1.8
Polymer H	150	180	1.8
Polymer I	150	180	1.8
Polymer J	150	180	1.8
Polymer K	150	180	1.8
Polymer L	150	180	1.8
Polymer M	150	180	1.8
Polymer N	150	180	1.8
Polymer O	150	180	1.8
Polymer P	150	180	1.8
Polymer Q	150	180	1.8
Polymer R	150	180	1.8
Polymer S	150	180	1.8
Polymer T	150	180	1.8
Polymer U	150	180	1.8
Polymer V	150	180	1.8
Polymer W	150	180	1.8
Polymer X	150	180	1.8
Polymer Y	150	180	1.8
Polymer Z	150	180	1.8
Polymer AA	150	180	1.8
Polymer BB	150	180	1.8
Polymer CC	150	180	1.8
Polymer DD	150	180	1.8
Polymer EE	150	180	1.8
Polymer FF	150	180	1.8
Polymer GG	150	180	1.8
Polymer HH	150	180	1.8
Polymer II	150	180	1.8
Polymer JJ	150	180	1.8
Polymer KK	150	180	1.8
Polymer LL	150	180	1.8
Polymer MM	150	180	1.8
Polymer NN	150	180	1.8
Polymer OO	150	180	1.8
Polymer PP	150	180	1.8
Polymer QQ	150	180	1.8
Polymer RR	150	180	1.8
Polymer SS	150	180	1.8
Polymer TT	150	180	1.8
Polymer YY	150	180	1.8
Polymer ZZ	150	180	1.8
Polymer AAA	150	180	1.8
Polymer BBB	150	180	1.8
Polymer CCC	150	180	1.8
Polymer DDD	150	180	1.8
Polymer EEE	150	180	1.8
Polymer FFF	150	180	1.8
Polymer GGG	150	180	1.8
Polymer HHH	150	180	1.8
Polymer III	150	180	1.8
Polymer JJJ	150	180	1.8
Polymer KK	150	180	1.8
Polymer LL	150	180	1.8
Polymer MM	150	180	1.8
Polymer NN	150	180	1.8
Polymer OO	150	180	1.8
Polymer PP	150	180	1.8
Polymer QQ	150	180	1.8
Polymer RR	150	180	1.8
Polymer SS	150	180	1.8
Polymer TT	150	180	1.8
Polymer YY	150	180	1.8
Polymer ZZ	150	180	1.8



ANSWER: The answer is 1000.0000000000002. This is because the original value was 1000, and the decimal point was moved 10 places to the right.

在這裏，我們可以說，當我們說「我」的時候，我們說的不是「我」，而是「我」的「我」。這就是說，我們說的「我」，其實是「我」的「我」，是「我」的「我」的「我」，是「我」的「我」的「我」的「我」……

THE VILLAGE

REFERENCES AND NOTES

and the first stage of the process is to identify the main components of the system. This is done by examining the system's behavior under different conditions and identifying the variables that affect it.

¹ See also the discussion of the relationship between the two in the section on "Theoretical Implications."

Journal of Health Politics, Policy and Law, Vol. 34, No. 4, Winter 2009
DOI 10.1215/03616878-34-4 © 2009 by The University of Chicago

• 111 •

As a result, the total number of patients included in the study was 100.

For more information about the study, visit the following sites:

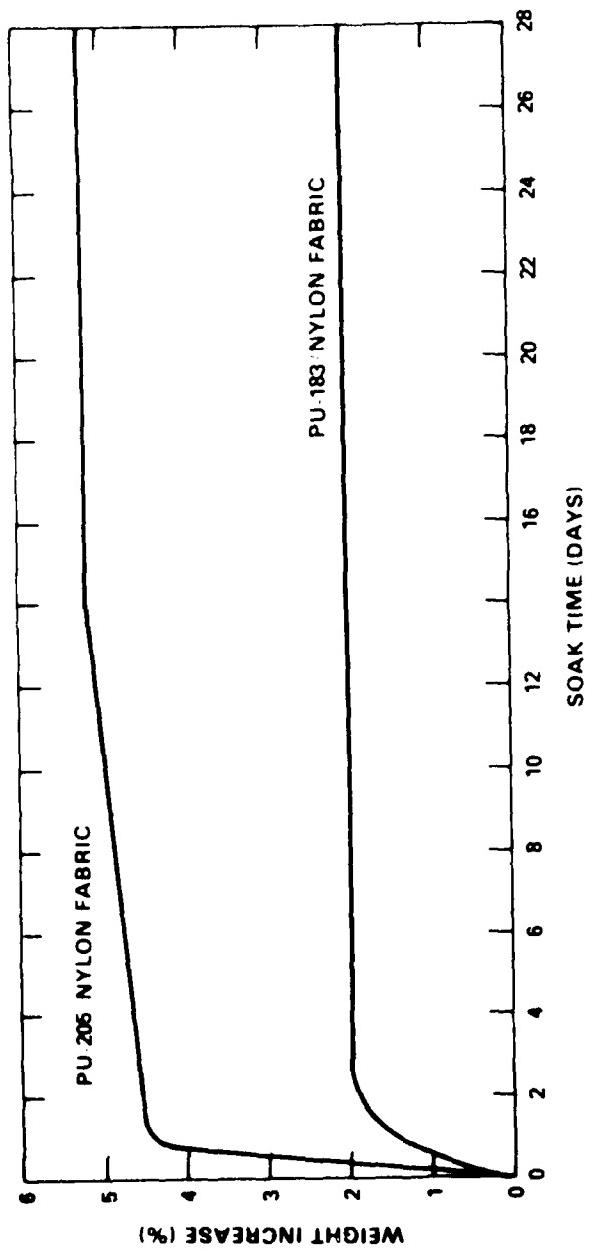
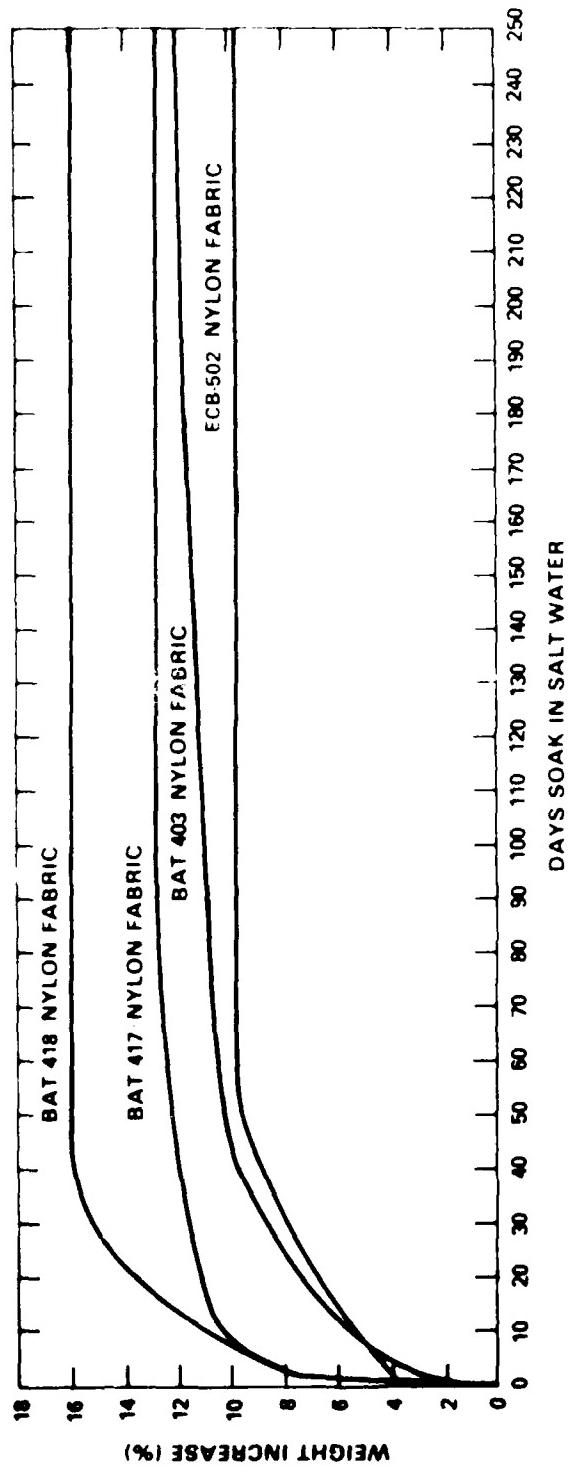


Fig. 1. Effect of water absorption on PU-coated fabrics. PU 206 and PU 183 are polyurethane resins.



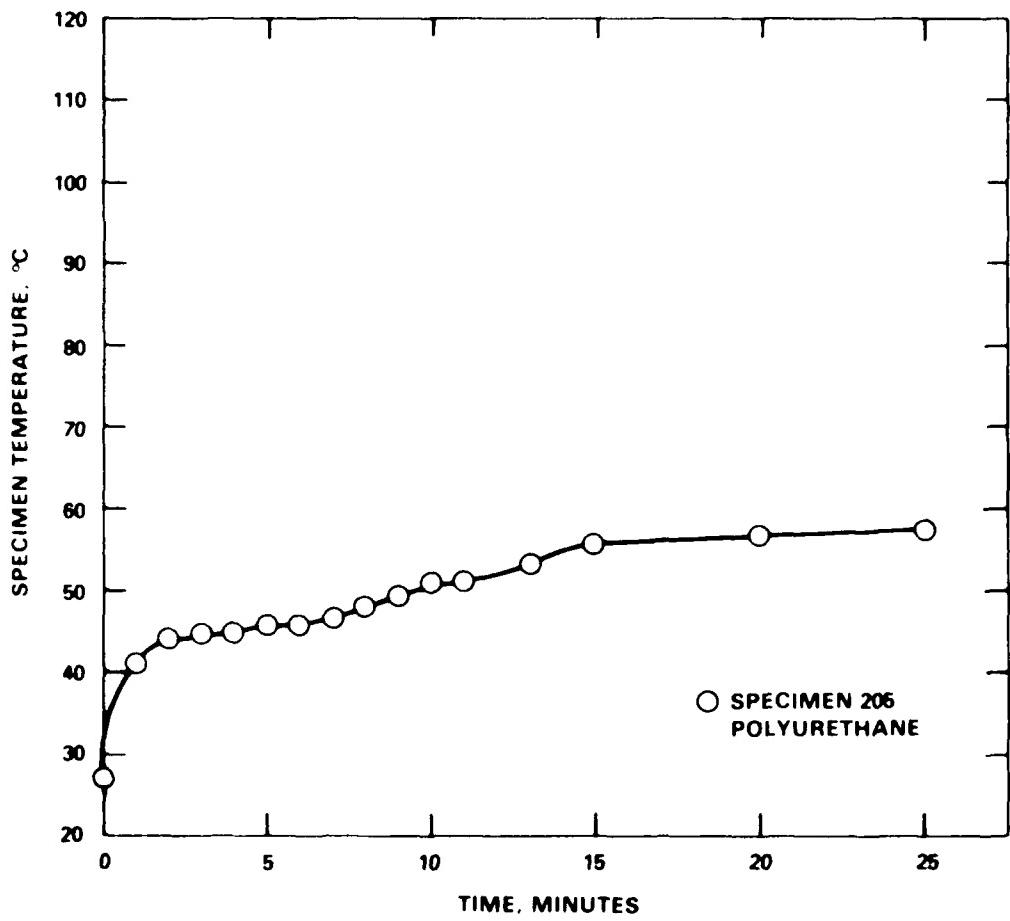


Figure 1. Specimen temperature versus time during cold fire exposure test. Heating rate, 10°C per Minute. Specimen exposed on front surface. Heating, 1.17 Pound per Square Inch.

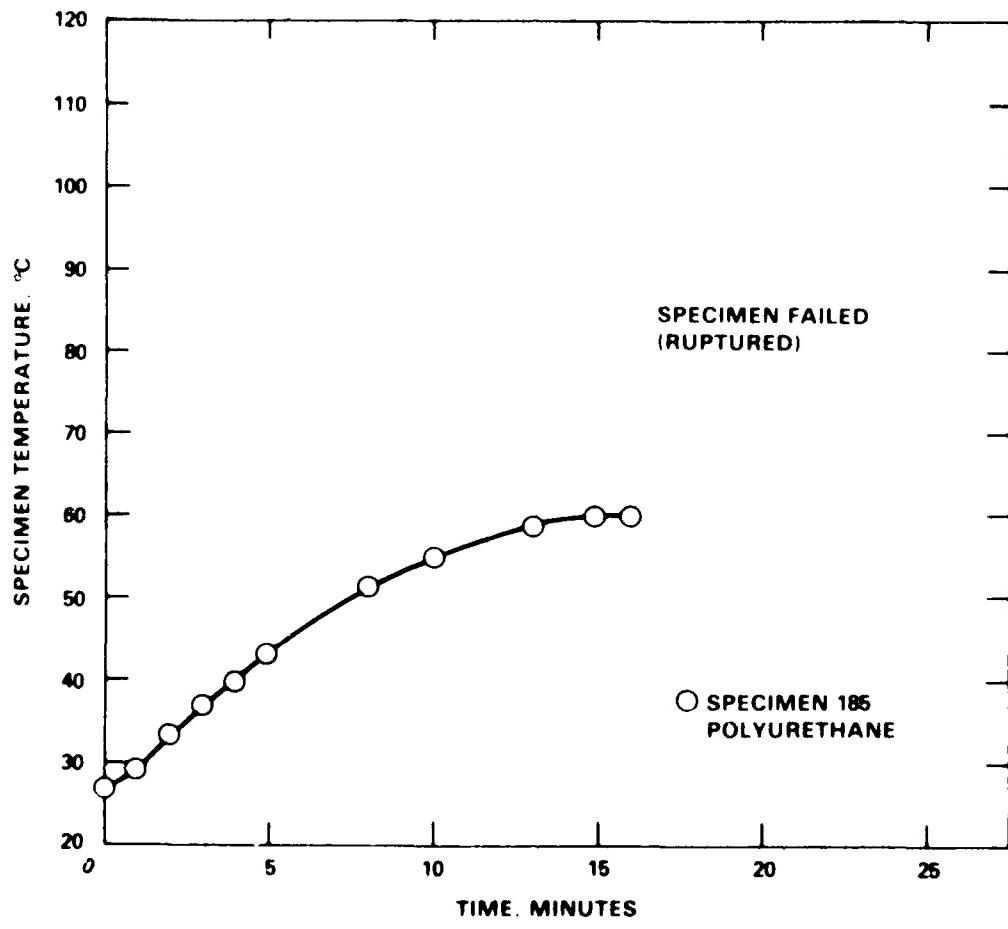


Figure 10. Effect of Temperature Upon Failure of Polyurethane Specimen
Heating at Constant Rate of 50°/Min. Superimposed on a Curve of the
Heating of Polyurethane per Square Inch

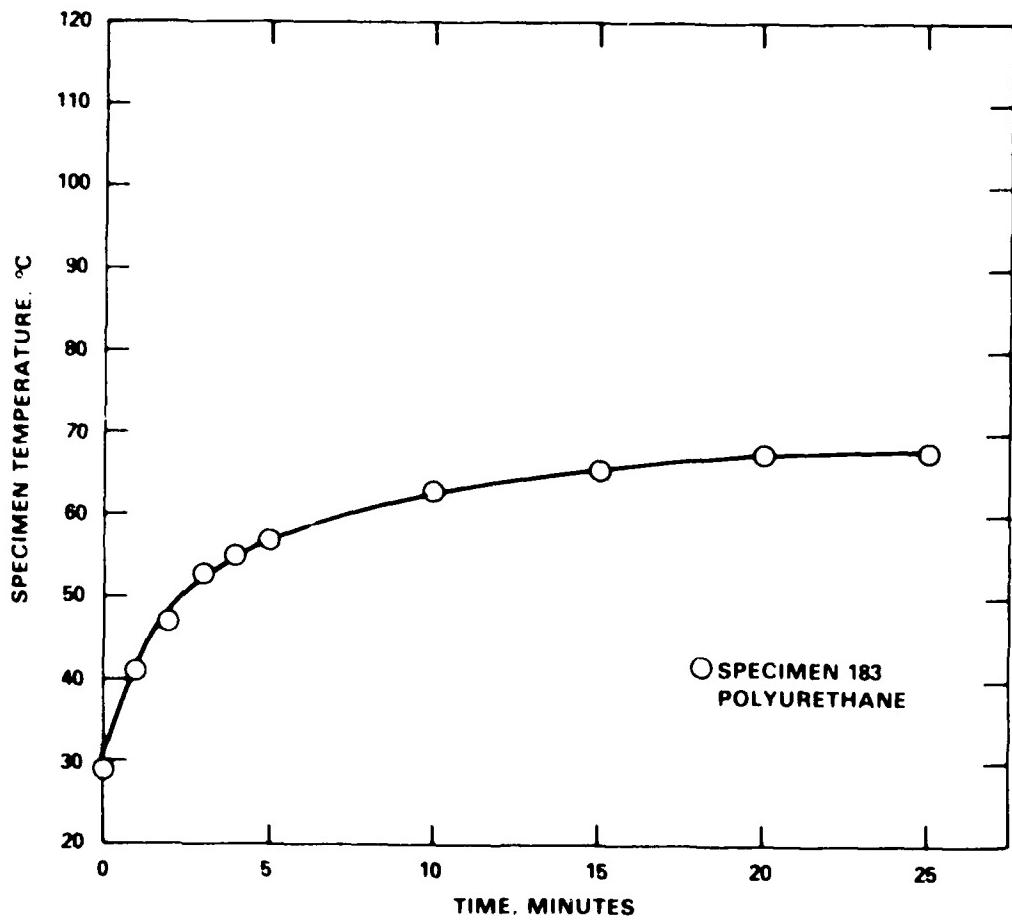


Figure 18 - Rate of Increase of Temperature of a 100% Thermoplastic Polyurethane Foaming Agent Specimen During a 25-Minute Uniaxial Impression Compression Test at 100 kg/cm² Starting at 10°C from Room Temperature (19).

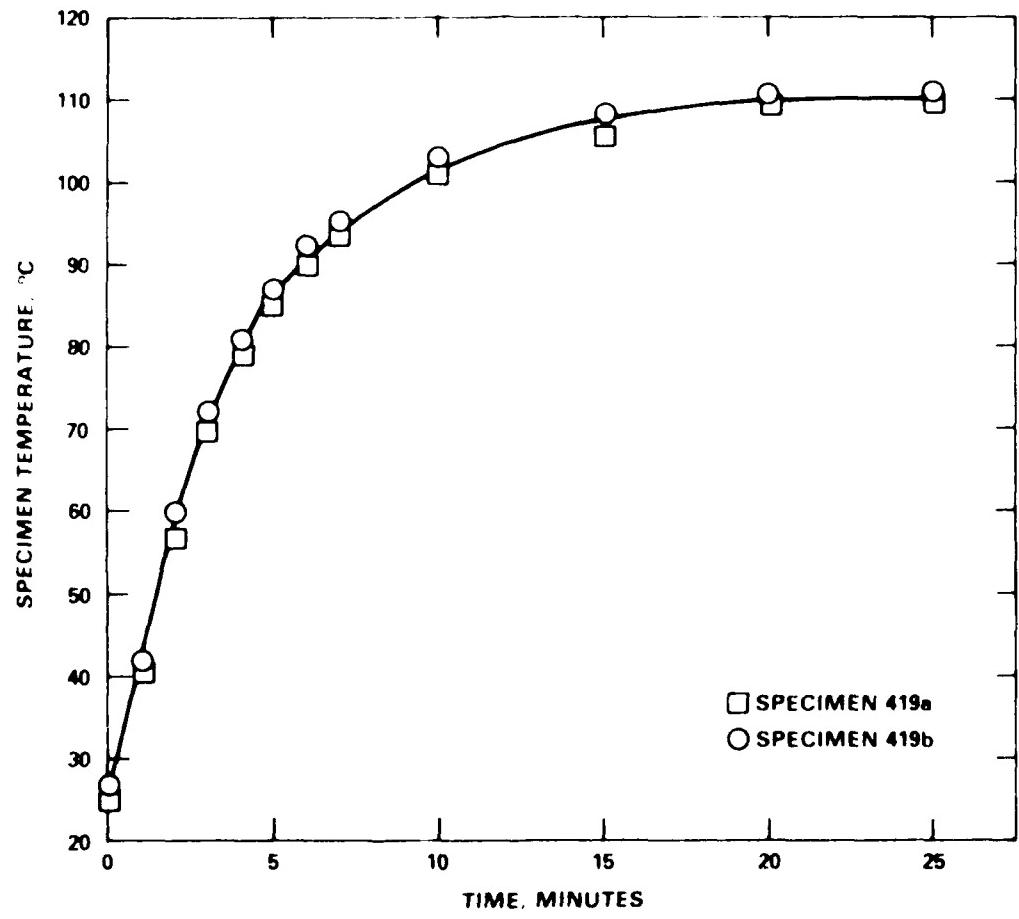


Fig. 1. - Specimen temperature vs. time during a 25-minute heating cycle. The heating rate was 10°C per minute. Specimens were held at 110°C for 15 minutes. The cooling rate was 10°C per minute.

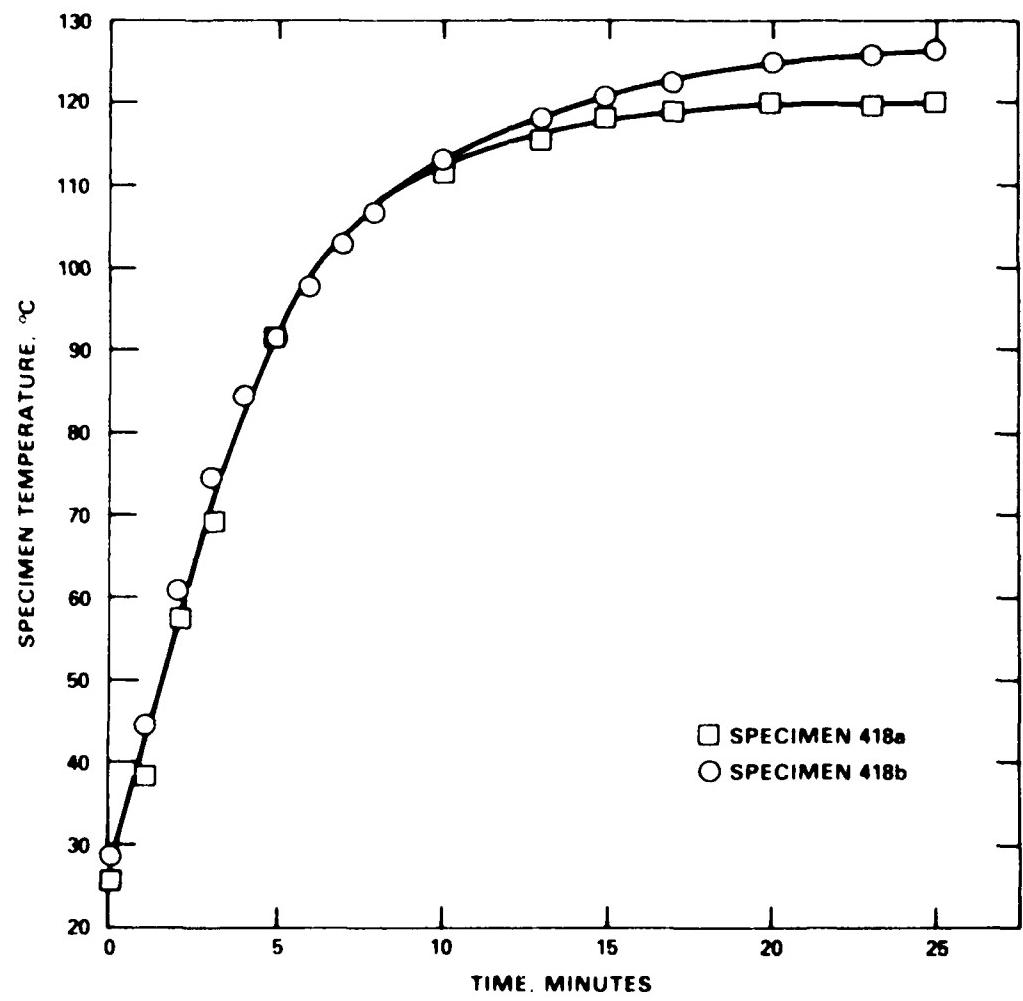


Fig. 1. Effect of compressive loading rate on temperature rise. Compressive loading rate, 100 lb/in.²/min.; specimen size, 1/2 in. diameter, 1/2 in. long; initial temperature, 25°C; atmospheric insulation.

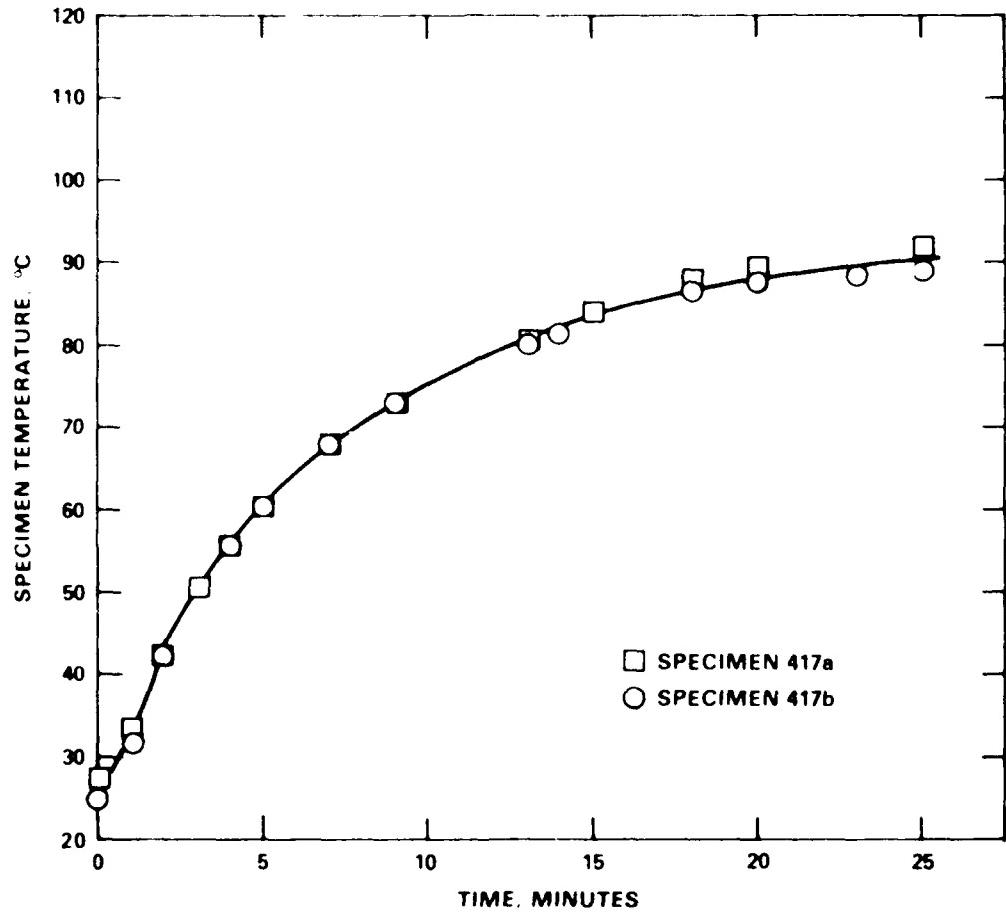


Fig. 10. Specimen temperature of the experimental and control specimens during heating at 10°C/min. The temperature of the control specimen was measured at 10°C/min. The temperature of the experimental specimen was measured at 5°C/min.

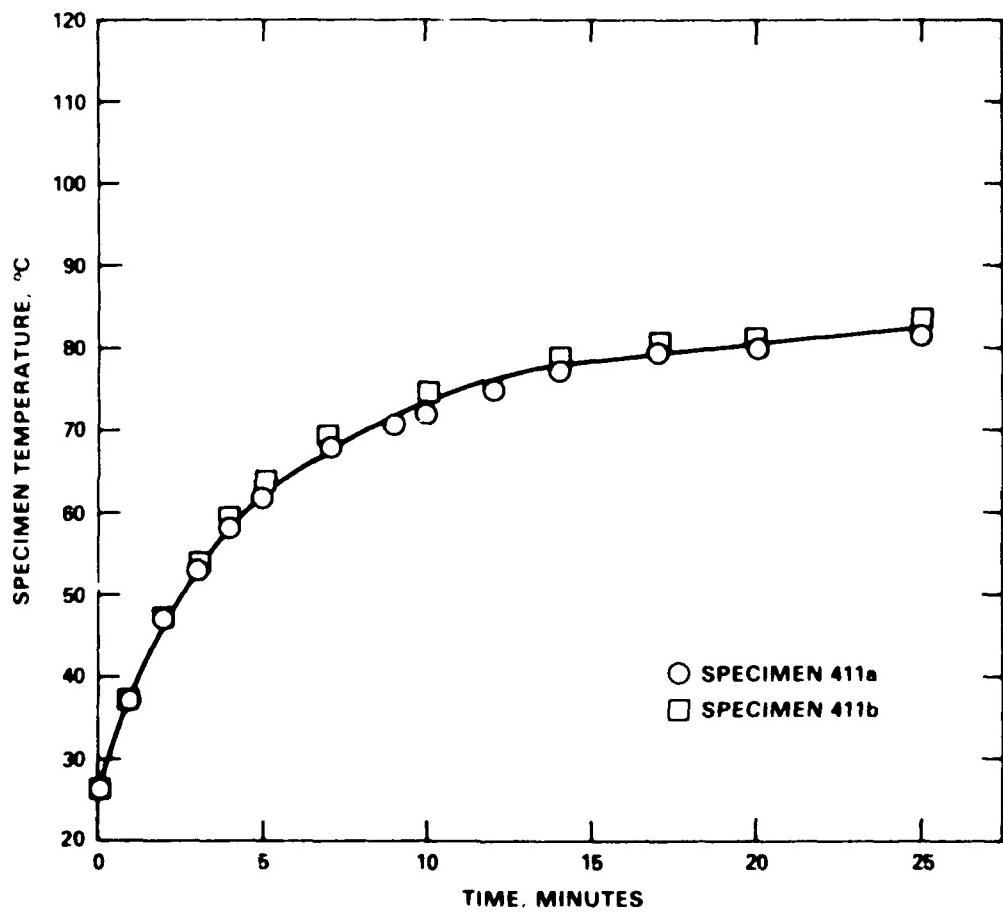


Figure 10 - Instantaneous Temperature Rise During Cyclic Compressive Loading at 1,000 Cycles per Minute Superimposed on a Compressive Load of 14.3 Pounds per Square Inch

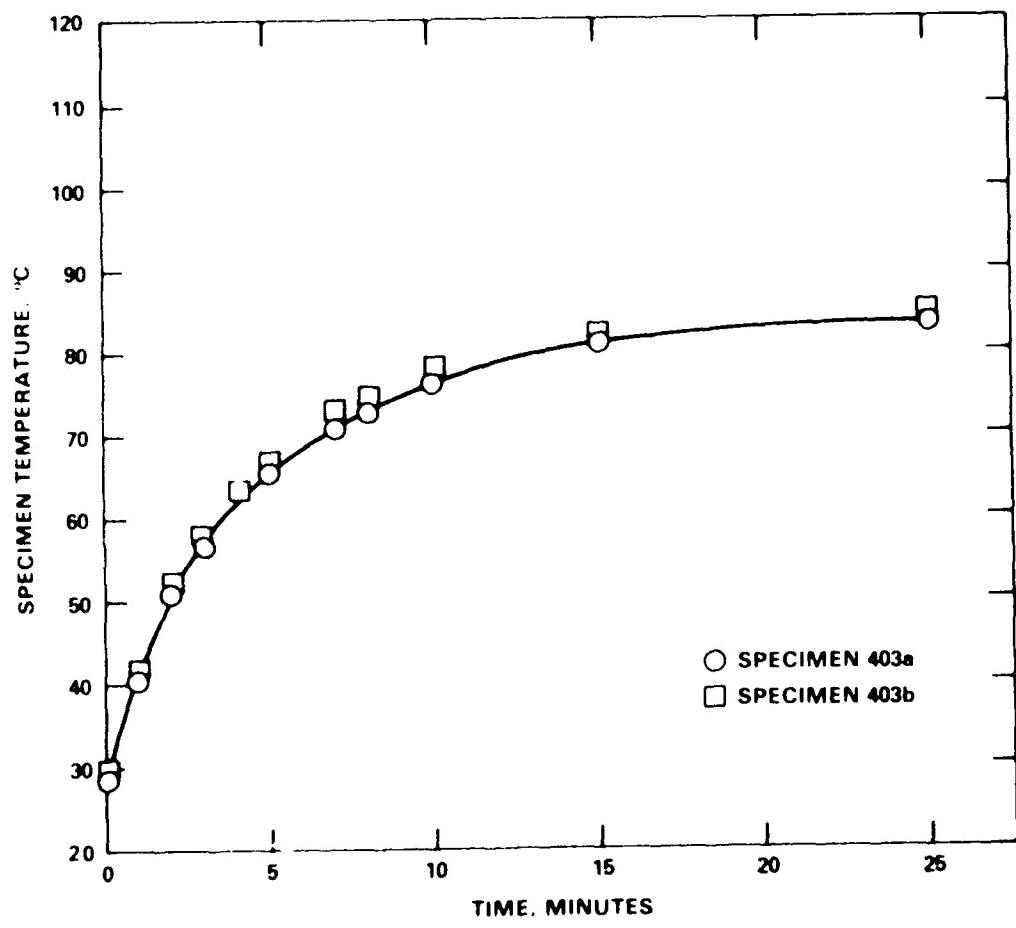


Fig. 10. Specimen temperature of Specimens 403a and 403b during the thermal shock test. The temperature was measured at 1 minute intervals. Superimposed on the temperature curve is a loading rate of 1.3 pounds per square inch.

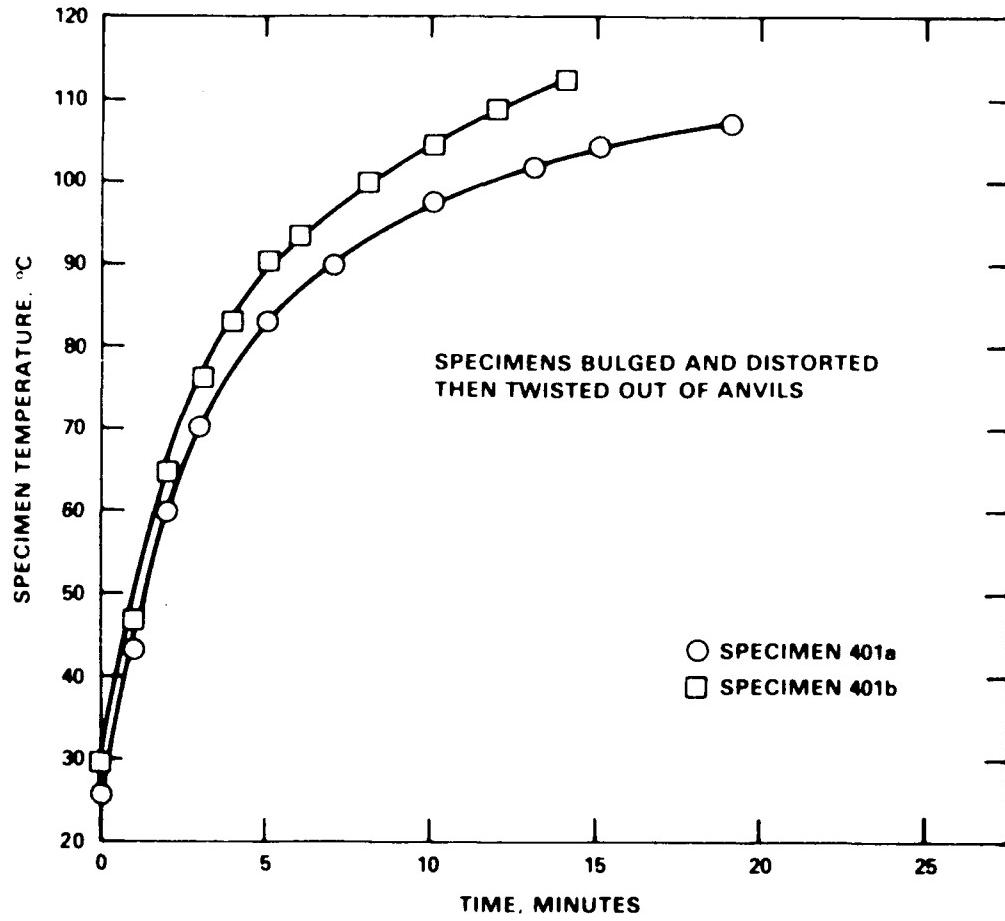


Fig. 1. Specimen temperature vs. time during heating. Heating rate 100° per minute. Temperature measured on a copper-constantan thermocouple having a 100° per millimeter per degree Fahrenheit scale.

Bepalon
Kevlar
VAF-22
Neoprene GNA
Neoprene W
Tetron A
Thionex

Antioxidant 702

Wingstay 100

STAN MAG Beads

Parel 58
Piccopale 100

T.12

Antioxidant MB
Polycarbonate (Desmophen 2020)

Santicizer 79™
Santicizer 711
Santocure
Santocure NS
Santoflex AW
Santoguard PVI
Sulfasan R

Cumar MH

Kadox-15

E.I. duPont de Nemours & Co., Inc.
Wilmington, DE 19898

Ethyl Corporation
451 Florida Street
Baton Rouge, LA 70801

Goodyear Tire & Rubber Company
Chemical Division
1485 E. Market Street
Akron, OH 44316

Harwick Chemical Corporation
60 S. Seiberling Street
P.O. Box 9360
Akron, OH 44305

Hercules Incorporated
910 Market Street
Wilmington, DE 19899

M&T Chemical Incorporated
Woodbridge Road
P.O. Box 1104
Rahway, NJ 07065

Mobay Chemical Company
Penn Lincoln Parkway West
Pittsburgh, PA 15205

Monsanto
Rubber Chemicals Division
260 Springside Drive
Akron, OH 44313

Neville Chemical Company
Neville Island
Pittsburgh, PA 15225

New Jersey Zinc Company, Inc.
Palmerton, PA 18071

Chemical Company
of America

Chemical Company
of America
Kingsport, TN
Division of Amoco
Kingsport, TN 37621

Chemical Company
of America
Division of Amoco
Kingsport, TN

Chemical Company
of America

Chemical Company
of America

Chemical Company
of America

Chemical Company
of America

Chemical Company
of America
Kingsport, TN
Division of Amoco
Kingsport, TN

Chemical Company
of America

Chemical Company
of America

Phillips Chemical Company
A Division of Phillips Petroleum Company
1200 Phillips Building
Bartlesville, OK 74003

Polymer United
101 N. Front Street
Wilmington, DE 19801

PPG Industries, Inc.
Chemical Division
One Gateway Center
Pittsburgh, PA 15222

Rohm and Haas Company
Independence Mall West
Philadelphia, PA 19106

SEMO, A Division of Products
Research & Chemical Corporation
410 Jersey Avenue
Gloucester City, NJ 08030

Shell Chemical Company
One Shell Plaza
Houston, TX 77001

Stauffer Chemical Company
Nyada Farm Road
Westport, CT 06880

Sun Refining and Marketing Company
Tubes Division
1608 Walnut Street
Philadelphia, PA 19103

Technical Processing, Inc.
136 Railroad Avenue
Paterson, NJ 07509

Tulco, Inc.
9 Bishop Road
Ayer, MA 01432

Carbowax
Silane A-186
Silane A-1100
Silane A-1120

E-S-E-N
Flexzone 3C
Rovalene 502
Sunproof Wax

POP 88

Isonol 100

AgeRite Hipar S
AgeRite Resin D
AgeRite Stalite
AgeRite White
Altax
Cumate
Ethyl Tuads
Methyl Tuads

Sunolite 666

Union Carbide Corporation
Silicones and Urethane Intermediates
Division
Old Ridgebury Road
Danbury, CT 06817

Uniroyal Chemical Company
Spencer Street
Nagatuck, CT 06770

UOP Incorporated
Process Division
20 UOP Plaza
Mt. Prospect & Algonquin Roads
Des Plaines, IL 60016

Upjohn Company
Polymer Chemicals Division
Battleground Road
P.O. Box 685
LaPorte, TX 77571

R.T. Vanderbilt Company, Inc.
30 Winfield Street
Norwalk, CT 06855

Witco Chemical Corporation
Organics Division
277 Park Avenue
New York, NY 10017

INITIAL DISTRIBUTION

Copies

- 1 USAMERIC
 - 1 CAMXFB-MG) Dr. John F. Sargent
 - 1 CORDME-VU) Mr. Paul Touchet
- 1 ARRADCOM/Plastics Technology Evaluation Center
 - A. M. Anzalone
- 1 AMMRC/MEL-349, Dr. G. R. Thomas
- 2 CNR
 - 1 ONR 413, Dr. K. J. Wynne
 - 1 ONR 431N, Dr. L. H. Peenles
- 2 NAVMAT/Office of Naval Technology
 - 1 MAT 071, Mr. O. L. Komson
 - 1 MAT 0715, Mr. J. J. Kelly
- 1 NAVSEA
 - 1 SEA 05R, Dr. Ventriglio
 - 1 SEA 05R25, Dr. Venderveldt
 - 1 SEA 05R47, Mr. Butler
 - 1 SEA 05R47C, Mr. Malakhoff
 - 1 SEA 56DC, Mr. Jones
 - 1 SEA 50151, Mr. Spaulding
 - 1 SEA 50461, Mr. Kleinhofn
 - 2 SEA 99612
 - 1 PMS 377J, Mr. Kenefick
- 1 Naval Sea Combat Systems Engineering Station, Norfolk, VA
 - Mr. H. Hindlin
- 12 DTIC
- 1 AFML/MBE
 - (Elastomers & Coating Branch)
 - Mr. J.K. Steron
- 3 USCOCGUARD/Commandant
 - 1 G-DMT-2-, LTIG Ian Grunther
 - 1 G-DMT
 - 1 G-DST
- 1 USCOCGUARD/Avery Point
 - Mr. Clark Pritchett
- 1 National Academy of Science
 - Dr. Stanley M. Barkin
- 1 Georgia Institute of Technology
 - School of Textile Engineering
 - Dr. W. Denney Freeston, Jr.
- 1 University of Michigan
 - Dr. Samuel K. Clark
- 1 AEROTET Liquid Rocket Company
 - Mr. P. B. Page
- 1 Alaska Hover Craft Inc.
 - Mr. Marvin E. Proctor
- 1 Albany International Research Co.
 - Ms. Meredith M. Schoppe
- 1 B. F. Goodrich Company
 - Mr. Oscar Mistud
- 2 Bell Aerospace Textron
 - NCSC/ c/o AALC-ETU/FL
 - 1 Mr. Casey Forrest
 - 1 Mr. Higgins
- 2 Bell Aerospace Textron/NY
 - 1 Dr. Paul K. Conn
 - 1 Mr. Ivan C. Snell
- 3 Bell Aerospace Textron/LA
 - 1 Mr. William B. Cross
 - 1 Mr. Wilfred H. Dukes
 - 1 Mr. J. Bell
- 1 Band, Lavis & Associates, Inc.
 - Mr. David R. Lavis
- 1 Goodyear Aerospace Corporation
 - Mr. J. E. Wells
- 1 Hover Systems Federal Corporation
 - Mr. R. W. Dyke
- 1 Hover Systems Incorporated
 - Mr. R. G. Longaker
- 1 Hercules Incorporated
 - Mr. A. L. Comen
- 1 Penn Engineering, Incorporated
 - Mr. Ray Lacey

1 Phillips Chemical Company
Dr. W. H. Cornell

CENTER DISTRIBUTION

	Copies	Code	Name
1 The Firestone Tire and Rubber Co. Mr. G. S. Kyker	5	1180	Offutt
	1	1183	Harry
	1	1184	Kordenbrock
1 ORI/Mr. Jon Buck	1	1556	Besch
	1	1630	Ford
1 Dow Chemical U.S.A. Dr. Normal E. Warren	1	28	Belt
	1	2803	Montemarano
	1	284	Rufolo
1 Uniroyal Development Dr. Joseph Sanda	6	2842	Klemens
	10	5211.1	Reports Distribution
	1	522.1	Unclassified
1 Westinghouse Electric Corp. Mr. J. F. Meier	1	522.2	Library (C)
			Unclassified
	2	5231	Library (A)
			Office Services

DTMRC NAMES THREE TYPES OF REPORTS

- 1. DTMC REPORTS.** A PERMANENT, SEMI-PERMANENT OR TEMPORARY RECORD OF PERMANENT TECHNICAL VALUE. THEY CARRY A COMPREHENSIVE IDENTIFICATION IDENTIFICATION REGARDING THEIR CLASSIFICATION OR THE INFORMATION CONTAINED.
- 2. BUREAU REPORTS.** A SEMI-PERMANENT RECORD OF TEMPORARY OR PROVISIONAL NATURE OR OF LIMITED IMPORTANCE OR SIGNIFICANCE. THEY CARRY A BUREAU IDENTIFICATION NUMBER.
- 3. WORKSHEET REPORTS.** AN INFORMAL RECORD OF INFORMATION DOCUMENTATION OF LIMITED USE AND IMPORTANCE. THEY ARE USED FOR INFORMATION WHICH IS NOT PERTINENT TO PERMANENT USE. THEY CARRY A BUREAU IDENTIFICATION NUMBER. THE INFORMATION CONTAINED IN THESE REPORTS MUST BE APPROVED BY THE HEAD OF THE BUREAU OR THE DIRECTOR OF A DIVISION OR A GROUP OF DIVISIONS.

**DATE
TIME**